NEGOTIATION OF MEANING IN L2 VOCABULARY ACQUISITION IN SYNCHRONOUS COMPUTER-MEDIATED AND FACE-TO-FACE CONTEXTS

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ABSTRACT

Learning the vocabulary of a language is one of the essential components of learning of a second language (L2). In a language classroom, time factor prompts most of the teachers to conduct explicit vocabulary teaching which requires the learners to memorise a large amount of vocabulary (Alemi, Sarab & Lari, 2012). But, according to Cervatiuc (2008), although the students try to recite the new vocabulary repeatedly, it is impossible to memorise a large amount of vocabulary. Thus, the negotiation of meaning is recognised as a good alternative method in learning vocabulary (Smith, 2003; Varonis and Gass, 1985). The mixed-method design (Creswell, 2014) in this study utilises the quantitative method to investigate the effectiveness of synchronous computer-mediated and face-to-face interactions in English vocabulary acquisition, whilst the qualitative method is used to explore the nature of negotiation of meaning in this study. The pre-test, immediate and delayed post-tests were administered to 8 synchronous computer-mediated dyads and 8 face-to-face dyads of participants. The dyads negotiated in Facebook or face-to-face to complete information gap tasks. The results of the post-tests indicated that although both synchronous computer-mediated and face-to-face interactions facilitate vocabulary acquisition, the 3 weeks delayed post-test shows a downward trend in the face-to-face group. In terms of negotiation of meaning, the synchronous computer-mediated environment produces slightly higher production compared to the face-to-face environment. The discourse features employed by the synchronous computer-mediated group were different from the face-to-face group during the negotiation of meaning. The findings in this study provide helpful insights for educators in terms of vocabulary teaching when designing the interactive tasks.

ABSTRAK

Pembelajaran kosa kata adalah salah satu komponen yang penting dalam pembelajaran bahasa kedua (L2). Di dalam kelas, faktor masa mendorong kebanyakan guru menjalankan pengajaran kosa kata yang memerlukan pelajar menghafal kosa kata dalam jumlah yang besar (Alemi, Sarab & Lari, 2012). Menurut Cervatiuc (2008), walaupun pelajar mempelajari kosa kata yang baru secara berulangkali, ia adalah mustahil untuk menghafal kosa kata dalam jumlah yang besar. Rundingan makna dijadikan sebagai kaedah alternatif yang baik untuk mempelajari kosa kata. (Smith, 2003; Varonis dan Gass, 1985). Reka bentuk penyelidikan kaedah bercampur (Creswell, 2014) dalam kajian ini melibatkan kaedah kuantitatif untuk menyiasat keberkesanan interaksi serentak melalui komputer pengantara dan interaksi secara bersemuka dalam pemerolehan kosa kata Bahasa Inggeris. Kaedah kualitatif digunakan untuk meneroka sifat rundingan makna dalam kajian ini. Pra-ujian, pasca-ujian segera dan pasca-ujian selepas 3 minggu telah dilaksanakan kepada 8 pasangan berinteraksi serentak melalui komputer pengantara dan 8 pasangan berinteraksi secara bersemuka. Pasangan ini berunding makna melalui Facebook atau secara bersemuka untuk menyelesaikan latihan mengisi maklumat di tempat kosong. Keputusan pasca-ujian menunjukkan bahawa interaksi serentak melalui komputer pengantara dan interaksi secara bersemuka memudahkan pemerolehan kosa kata. Walau bagaimanapun, selepas 3 minggu ujian pasca dijalankan, skor kumpulan yang berinteraksi secara bersemuka menunjukkan trend menurun. Dari segi rundingan makna, persekitaran kumpulan yang berinteraksi serentak melalui komputer pengantara didapati menggalakkan penggunaan kosa kata yang lebih tinggi berbanding dengan persekitaran kumpulan yang berinteraksi secara bersemuka. Ciri-ciri wacana yang digunakan oleh kumpulan yang berinteraksi secara serentak melalui komputer pengantara adalah berbeza daripada kumpulan yang

berinteraksi secara bersemuka semasa rundingan makna. Penemuan dalam kajian ini telah memberikan maklumat yang bermanfaat untuk para pendidik dalam pengajaran kosa kata dalam hal reka bentuk tugasan interaktif.

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LIST OF SYMBOLS AND ABBREVIATIONS

i	:	Current Stage of Language Competence
<*T*>	:	Trigger
<*I*>	:	Indicator
<*Ii*>	:	Indicator 2
<*R*>	:	Response
<*RR*>	:	Reaction to Response
<*RR*+>	:	Positive Reaction to Response
<*RR*->	:	Negative Reaction to Response
<*TD*>	:	Testing Deduction
<*TD*+>	:	Positive Testing Deduction
<*TD*->	:	Negative Testing Deduction
<R^2>	:	Response 2
<*C*>	:	Confirmation
<*C*+>	:	Positive Confirmation
<*C*->	:	Negative Confirmation
<*RC*>	:	Reconfirmation
CALL	:	Computer-Assisted Language Learning

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

Learning vocabulary of a language is one of the essential components in the learning of any second language. It allows the learners to convey their ideas and is the key to master 4 language skills which are listening, speaking, reading and writing (Nation, 2001). There are a number of strategies to learn vocabulary. One of them is through negotiation of meaning. Long (1980) claimed that a negotiation of meaning normally occurs because of conversational difficulty which needs greater adjustments in the quality of the interaction. In 1996, Long argued that interactive tasks which promote negotiation of meaning, facilitate the development of a second language in the Interaction Hypothesis Theory.

In this study, negotiation of meaning is defined as an attempt to work through perceived or actual gaps in interaction or understanding of message meaning (Tam, Kan & Ng, 2010; Ng & Sappathy, 2011). Computer-mediated communication is defined as the communications with high levels of interactivity that took place between humans with the aid of computers (December, 1996; Herring, 2001; Walther, 1992; Chun, 1994; Smith, 2003). Besides face-to-face communication environment, synchronous computer-mediated communication takes place in an environment where learners can carry out negotiation of meaning in their means to learn new vocabulary.

In the field of computer-mediated communication, online chat has long been evaluated as the most interactive tool for several reasons (Paramskas, 1999). First and foremost, as a form of synchronous computer-mediated communication, online chat creates an authentic and real-time communication opportunity for second language learners through cyberspace (Teng, 2010). Besides that, in comparison with face-to-face communication, online chat provides more communication opportunities, especially for the non-high proficiency learners, and those who have low confidence and feel embarrassed to interact face-to-face (Beauvois, 1998; Tidwell and Walther, 2006; Tam, Kan & Ng, 2010). So, in this study, online chat is selected as the computer-mediated environment for the learners to perform computer-mediated communication.

However, there were studies which argued that computer-mediated communication is not suitable for social interaction due to lack of non-verbal cues (Herring, 1996; Kern, 2006). Studies have revealed that computer-mediated communication users showed dissatisfaction in computer-mediated discussions compare with face-to-face environments (Thatcher, 2005; Kim, 2014). Thus, it is crucial to have prudent evaluation of computer-mediated communication in ESL learning contexts.

In view of this, this study examines whether negotiated interaction helps English as second language learners in vocabulary acquisition and retention. The learners' performance in computer-mediated communication is compared to the traditional face-to-face communication. This study also analyses the nature of synchronous computer-mediated and face-to-face negotiation of meaning environments during information gap activity.

This chapter aims to present the background and problem statement of this study. It also includes the purpose of the study, the research objectives, the research questions and the significance and the limitations of this research.

1.1 Background of the Study

1.1.1 The Importance of English

As the world becomes globalised, English acts as the lingua franca or common language for communicating purpose (Crystal, 2003). In Malaysia, many prominent figures acknowledged the importance and roles of English. Sultan Nazrin Shah, the Sultan of the state of Perak, Malaysia, stressed the importance of English in the twenty-first century workplace and those who are proficient in the language would experience many benefits in the global workplace (The Star, 17 August 2009). The current Malaysian deputy prime minister Tan Sri Muhyiddin Yassin also echoed the importance of English by saying that university graduates' basic knowledge is inadequate if their ability to communicate and write effectively in English is low (New Straits Times, 3 September 2014). In other words, university graduates who are proficient in English are perceived as having more advantages and opportunities in the workplace compared to university graduates with low proficiency in English.

1.1.2 The Current Status of English in Malaysian Curriculum

In 1970, the introduction of the New Education Policy resulted in Malay replacing English as the medium of instruction in all schools and tertiary institutions and it became the national language (Bawani Selvaraj, 2010). Apart from that, the steady

decline of English language in Malaysia over the years urges the need to increase the command of English among ESL learners (Asha, 2012; Kow, 2012).

According to the Ministry of Education (2010), with the objective to improve the English proficiency among ESL learners, the policy of "Upholding the Malay Language and Strengthening the Command of English" had been introduced by Malaysian government. It was implemented after the decision to change the medium of instruction for Science and Mathematics subjects to Malay.

1.1.3 Computer in Malaysian Education System

Besides the policy mentioned in the previous section, the Ministry of Education also implemented computer as a tool to encourage the learners to learn English in an English language classroom. This was reported in the 2001-2010 Education Development Plan (Ministry of Education, 2001). According to the Ministry of Education (2001), by implementing computer in English a second language lessons, there is hope that the level of English proficiency among students will increase. With the vigorous attempt by the Malaysian government, the students' English proficiency level should ideally be enhanced. A large amount of budget has been proposed by the government for the computerisation of schools (Abdul Rahim Bakar & Shamsiah Mohamed, 2005). However, based on the reviewed literature, Malaysian undergraduates are still facing problems communicating in English. The statement of vocabulary learning problem will be discussed in the next section.

1.2 Statement of Problem

Despite learning English as a Second Language for at least 11 years in school, many Malaysian undergraduates have still not mastered the language (Berhannudin Mohd Salleh et al., 2010). Among the reasons cited, most of the learners are impeded by deficient vocabulary knowledge and skills to deliver their messages with clarity (Teoh, 2009). This phenomenon resulted in the rise of many problems in their academic performance, especially with academic writing.

Many learners feel confused when they learn vocabulary and they always face problems in terms of finding appropriate vocabulary to express themselves (Wang, Teng & Chen, 2015). In a language classroom, time factor causes the learners not to have enough chances to practice all the vocabulary they are learning. Due to this, most teachers carry out explicit English vocabulary teaching which requires the learners to memorise a large amount of vocabulary (Alemi, Sarab & Lari, 2012). According to Cervatiuc (2008), although the students try to recite the new vocabulary repeatedly, it is impossible to memorise a large size of vocabulary. There is a need to look for alternative ways to learn vocabulary.

In the modern era, technology seems to be one of the alternative means to learn vocabulary. According to Mooji (2005), technology enhances the classroom interaction features. It also provides more communication opportunities to non-high proficiency learners' and those who feel embarrassed to use English in face-to-face communication (Tam, Kan & Ng, 2010; Ng & Sappathy, 2011). However, studies like de la Fuente's (2003) also cited that synchronous computer-mediated negotiated interactions are not effective in promoting second language vocabulary acquisition. Kim's (2014) study

demonstrated that the synchronous computer-mediated split turns in interaction caused the learners stress. These studies dispute the pre-assumption about the advantages of certain patterns of synchronous computer-mediated interaction. Thus, this calls for more empirical studies in order to explore the issue.

1.3 Purpose of the Study

In view of the previously mentioned problems, this study attempts to investigate the impact of interactions on English vocabulary acquisition in synchronous computer-mediated and face-to-face environments. The study will look into the nature of the negotiation of meaning environment during the information gap activity.

1.4 Research Objectives

There are two research objectives in this study which are:

i. To examine the effectiveness of synchronous computer-mediated and face-to-face negotiation of meaning environments in the retention of second language new vocabulary items.

ii. To analyse the nature of synchronous computer-mediated and face-to-face negotiation of meaning environments during information gap activity.

1.5 Research Questions

The research questions of this study are:

i. Is there a significant difference between synchronous computer-mediated group and face-to-face group in ESL learners' retention level in the acquisition of English vocabulary?

ii. Is there a significant difference between synchronous computer-mediated interaction and face-to-face interaction in the ratio of negotiation of meaning in term of turns?

iii. What are the differences in discourse features in term of triggers, indicators, responses, and reactions to response employed by the ESL learners during synchronous computer-mediated and face-to-face negotiation of meaning in information gap activity?

1.6 Significance of the Study

This empirical study will add new knowledge into how interactive activity facilitates the acquisition and retention of second language vocabulary. It also provides insight on how ESL learners negotiate in synchronous computer-mediated and face-to-face environments during the information gap activity. The study findings will provide meaningful insights to teachers in teaching the second language vocabulary.

1.7 Limitations of the Study

Since it is quite impossible for a single researcher to undertake a large scale research due to the constraints of resources and time, the present research is limited to a small sample size of 32 first-year undergraduates. The generalisation to a larger audience may not be made. The target vocabulary items involved only the use of concrete nouns of auto parts. This study does not test other aspects of a language such as grammar. The participants of the study are only intermediate ESL learners. Thus, the results of the study should not be generalised to low and high proficiency groups.

1.8 Summary of the Chapter

This initial chapter has presented the background and the purpose of the present study. It has also explained the significance and limitations of this study. The following chapters will address the remaining components comprising this study. In the next chapter, Chapter 2, a review of literature relevant to this study is described. In Chapter 3, the methodology used in carrying out the present study is discussed. This is followed by Chapter 4 which presents and discusses the results and interpretation of the findings in connection to the research questions. Lastly, Chapter 5 concludes the findings of this study by providing implications and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

The present study attempts to investigate the impact of interactions on English vocabulary acquisition in synchronous computer-mediated and face-to-face environments. In line with this, this chapter aims to present a review on the literatures and frameworks which are related to this study. The first section presents information related to interaction and negotiation in second language acquisition. The second section explains briefly the history of computer-assisted language learning (CALL). The roles and advantages of CALL are discussed in the third and fourth sections. The fifth section discusses the vocabulary teaching and learning of a second language. The final section is about the relevant past studies on negotiation of meaning and second language vocabulary acquisition.

2.1 Input, Interaction and Negotiation in Second Language Acquisition

This section discusses the theoretical background on constructs related to the acquisition of vocabulary. These constructs are input, interaction and negotiation of meaning.

2.1.1 Comprehensible Input Hypothesis

Input has been widely recognised for its role in second language acquisition. Researchers deem it as one of the essential components for language learning (Mitchell, Myles & Marsden, 2013). According to Zhang (2009), input is the language data which

the learner is exposed to in language learning. During the late 1970s and early 1980s, Stephen Krashen and others argued that input at the right level of difficulty was necessary for second language acquisition to take place. In line with that, Krashen (1985) proposed the Monitor Model. The model comprises a set of five basic hypotheses which are The Acquisition-Learning Hypothesis, The Monitor Hypothesis, The Natural Order Hypothesis, The Input Hypothesis and The Affective Filter Hypothesis.

According to The Input Hypothesis, Krashen (1985) introduced the construct of comprehensible input. Comprehensible input is defined as second language input just beyond the learner's current second language competence. The idea of the hypothesis is, if a learner's current stage of language competence, which is symbolises as *i*, the learner's comprehensible input should be in $i + 1$. In other words, the input cannot be in $i - 1$ which is too simple to the learner, and in $i + 2$ which is too difficult to the learner. Krashen (1985) explained that input in $i + 1$, the learner will still be able understand the input, but it should contain linguistic evidence relevant for the next step in the language development sequence. Krashen (1985) also argued that when input is either too simple or too complex, it will not be useful for the learner's acquisition.

Besides that, there is a key claim in the Input Hypothesis, which is, the learners do not need to produce second language output in order to develop the interlanguage system. Krashen (1985) claimed that the opportunity for regular parsing and interpretation of suitable input $i + 1$ will be sufficient to develop learners' interlanguage system.

However, Krashen's idea on language input has been frequently criticised for being vague and imprecise. According to Weche (1984), the theory asserts that comprehensible input is important for second language acquisition to take place, but it does not further explain what comprehensible input is, while researchers like Mitchell, Myles & Marsden (2013) argued that the theory is unable to provide answers on the manner to determine the levels of *i* and *i + 1*. Pica (1994) contested that it is insufficient for second language learners to form meanings if they are only exposed to input. This was echoed by Swain (1985), who stated that in a second language learning, comprehensible output plays crucial roles in assisting the learners to notice the knowledge gap in terms of rules, forms and features of the second language.

The Comprehensible Input Hypothesis also failed to account for the difference between input and intake (Lankiewicz, 2011). Corder (1967) explained the difference between input and intake. Input is what a learner listens or reads, and intake is what is taken in by the learner. When a second language learner is exposes to input, even if the input is comprehensible, not everything is remembered. Intake is "the part of input that stays in the stores of long-term memory" (Lankiewicz, 2011, p. 228). Intake is deemed as the limited amount of input that second language learners retain, store and relate to existing linguistic knowledge.

Researchers like Long (1981, 1983a, 1983b, 1996) and Zhang (2009) argued that input alone cannot facilitate second language learning and the involvement of interaction is necessary to facilitate the input functions. This idea of making comprehensible input retainable for the second language learner led to the investigations into areas such as

interaction and negotiation of meaning. The following section is a discussion related to the interactionist hypothesis.

2.1.2 Interactionist Hypothesis

Interactionists believe that negotiation of meaning facilitates second language acquisition. The idea behind the Interaction Hypothesis (Long, 1981, 1983a, 1983b, 1996) is based on the idea that negotiated meanings make the language input more understandable and help to achieve mutual understanding, and feedback is crucial in two or more L2 learners' interaction.

The early version of Interaction Hypothesis (Long, 1981, 1983a, 1983b) is derived from Krashen's Input Hypothesis (1985). Both Interaction Hypothesis and Input Hypothesis share the same idea of second language acquisition where a distinctive language acquisition mechanism is involved. The only difference between the two theories is that Krashen's Input Hypothesis (1985) does not cover the interactive aspects of discourse and argues that second language learner are the passive recipients of language input, while Interaction Hypothesis (Long, 1981, 1983a, 1983b) covers the interactive aspects of discourse and deems the aspects function as the modifier to switch the difficulty level of language input from hard to easy, in order to reach mutual understanding among the learners.

The revised version of Interaction Hypothesis highlights the attempt to clarify the process by which input becomes intake, through the added notion of selective attention and second language processing capacity during the negotiation of meaning. The negative feedback provided by the learners in the negotiation of meaning process or

elsewhere has the possibility to facilitate second language development, "at least for vocabulary, morphology and language-specific syntax…" (Long, 1996, p. 414). Negative feedbacks, including recasts, which are elicited in negotiation of meaning draws learners' attention to mismatches between input and output (Long, Inagaki, Ortega, 1998). It can induce the noticing of the kinds of forms like semantically lightweight, perceptually non-salient, little or communicative distress. This highlighted the possible contribution of negative evidence in the target language development.

However, Long's Interaction Hypothesis mostly focuses on the examination of the native speaker and non-native speaker discourse. The models which explain the discourse between non-native speaker and non-native speaker will be discussed in the next section of this chapter.

2.1.3 Negotiation of Meaning

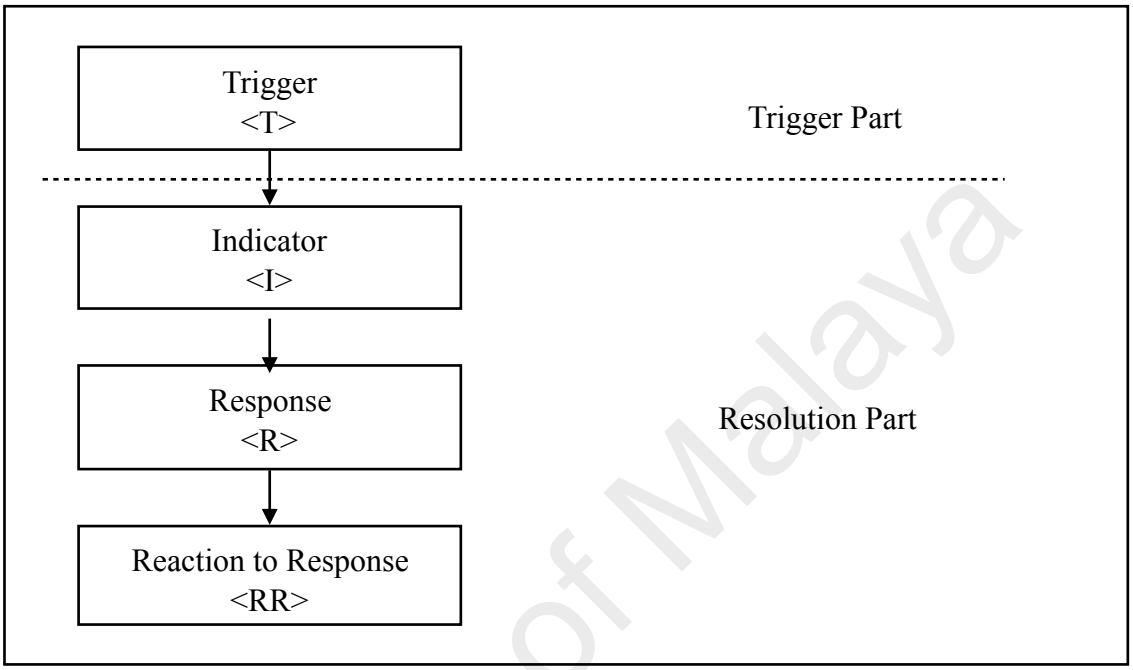
This section discusses two models of negotiation of meaning. The first model is Varonis and Gass's (1985) Negotiation Model which mainly focused on face-to-face communication. While, the second model is Smith's (2003) Expanded Negotiation Model, which is expanded from Varonis and Gass's (1985) model. It is used to depict the incomprehension in computer-mediated communication.

2.1.3.1 Varonis and Gass's (1985) Negotiation Model

In 1985, Varonis and Gass proposed the Negotiation Model which can be referred to in *Figure 2.1*. It is a widely used model to depict the non-understanding in non-native

speaker and non-native speaker conversations (Fernández-García & Martinez-Arbelaiz, 2002; Smith, 2003; Tam, Kan & Ng, 2010; Nam, 2011).

Figure 2.1: Varonis and Gass's (1985) Model of Negotiated Interaction



Note: Adopted from Varonis and Gass (1985, p.74).

It is a model dividing the face-to-face negotiation of meaning sequences into two parts, which are *trigger part* and *resolution part*. The framework classifies the face-to-face negotiation of meaning routines with four functional primes. The functional primes are *trigger <T>* and in resolution part which consists of the essential component *indicator <I>*, and optional components *response <R>* and *reaction to response <RR>*. The following *Table 2.1* shows an example of a discourse based on the Varonis & Gass's (1985) Negotiation Model.

Table 2.1: An example of a discourse based on the Negotiation Model

(Varonis & Gass, 1985)

Utterance	**Functional Prime**
A: I need to buy an oven.	Trigger, <T>
B: What is an oven?	Indicator, <I>
A: It is a kitchen tool in box form to bake a cake	Response, <R>
B: Oh, I got it!	Reaction to Response, <RR>

A *trigger* <*T*> is a part of an utterance or an utterance of the speaker which signals an incomprehensible situation to the listener. Refer to the example in *Table 2.1*, the word 'oven' is the *trigger*. This follows by an <*I*> which is a signal from the listener to the speaker to show that he or she is confused about the speaker's idea. An <*R*> will only happen when the speaker attempts to make some clarifications of the ideas. It shows in the example when the speaker elaborates on what is an oven, to the listener. When the listener gives a *response* that he or she achieves the realisation of the idea, then it is an <*RR*>. In the example, the listener utters "Oh, I got it!" to indicate he or she has realised the idea of the speaker.

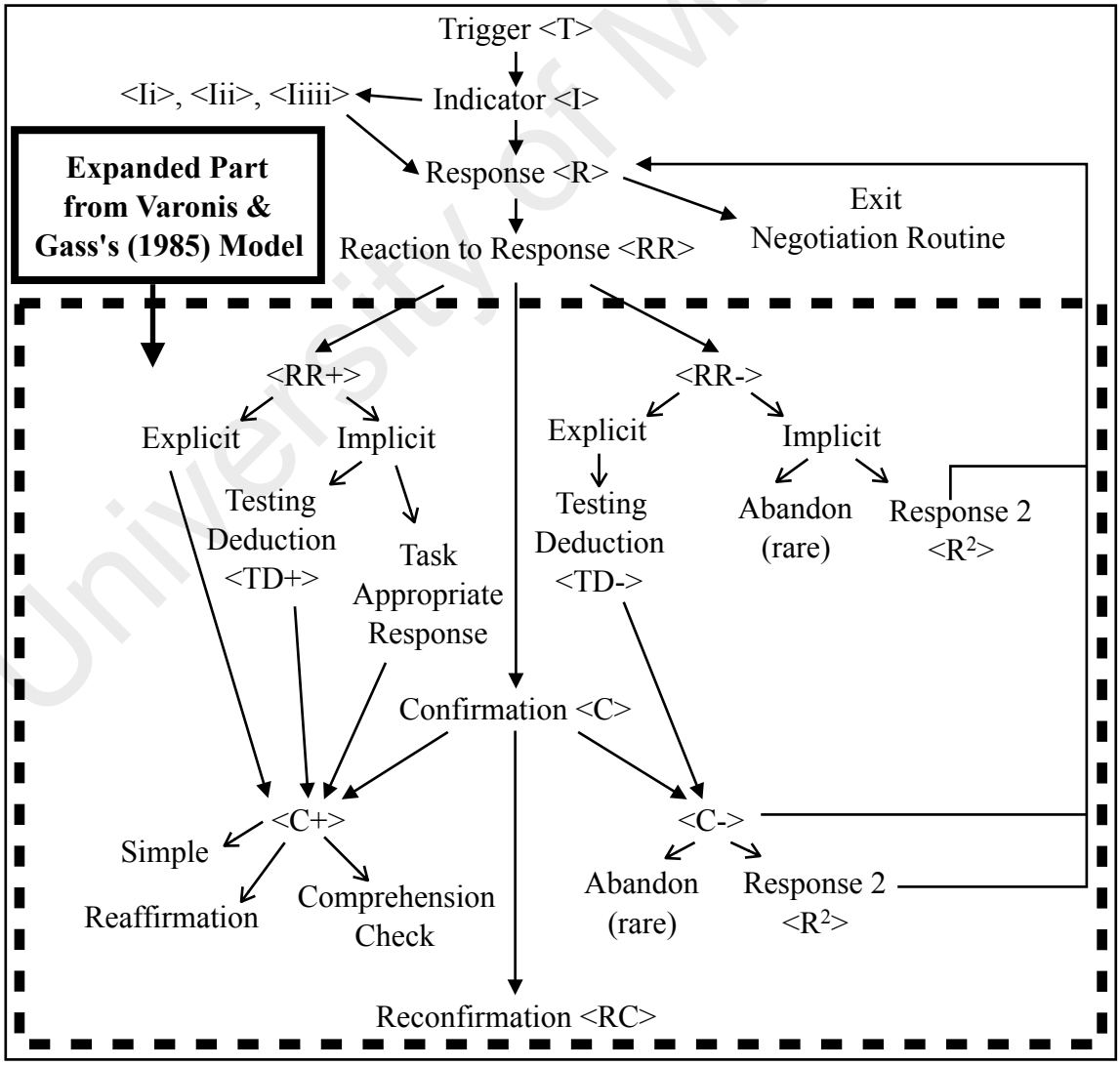
According to Pellettieri (cited in Smith, 2003), synchronous computer-mediated negotiation routines are slightly different from face-to-face negotiation routines. Face-to-face interaction is in strict turn adjacency, but synchronous computer-mediated interaction always contains a delay or long-delay between <*T*> and <*I*>. The feature is known as *split negotiation routines* (Smith, 2003). Based on the argument, Varonis and Gass's (1985) model is said to be inadequate to analyse synchronous computer-mediated interaction in a detailed manner. Due to this reason, Smith (2003) expanded Varonis and Gass's (1985) model and claimed that the expanded model is "a more

accurate tool for describing computer-mediated negotiated interaction than those offered to chart face-to-face negotiation episodes" (p. 38). The model will be discussed in the next section.

2.1.3.2 Smith's (2003) Expanded Negotiation Model

Figure 2.2 below shows Smith's (2003) expanded model of negotiation of meaning. According to Nam (2011), it is deemed as a more comprehensive model to describe synchronous computer-mediated text-based negotiation of meaning.

Figure 2.2: Smith's (2003) Model of Computer-Mediated Negotiated Interaction



Note: Adopted from Smith (2003, p. 50).

With reference to Figure 2.2, Smith (2003) argued that not all <*RR*>*s* will lead to a clean and appropriate finale of negotiation routines. This happens in face-to-face and computer-mediated interactions. As mentioned by Varonis and Gass (1985), an <*RR*> serves as an <*I*> when the listener is not understand or partially understand the speaker's message. Smith (2003) pointed out the importance to look at <*RR*+> and <*RR*-> as these components directly influence the subsequent discourse. In the model, <*RR*-> is *negative reaction to response* that indicates an incomplete understanding of target item, while <*RR*+> indicates a proper understanding of target item.

<*RR*> can be explicit or implicit. The examples of *explicit* <*RR*+> are "OK" and "I understand", while *explicit* <*RR*-> are "I don't understand" and "Can you elaborate more?". For *explicit* <*RR*->, the negotiation routine flow tends to jump immediately back to the second round of the *response phase* <R^2>, or in rare cases, may simply abandon the negotiation routine. Alternatively, the listener may use *implicit* <*RR*>. There are two types of *implicit* <*RR*>. This consisted of *testing deduction* <*TD*> which is found in both <*RR*+> and <*RR*->, and *task appropriate response* <*TAR*> which is only presented in <*RR*+>. In negotiation routine, <*TD*+> happens when the listener believe he has some idea about the nature of the element under negotiation, while <*TD*-> happens when the listener shows his lack of full understanding to the speaker's idea. According to Smith (2003), <*TAR*>*s* are "utterances that are contextually relevant to the preceding stretch of discourse" (p. 50) and that implicitly show a degree of understanding or non-understanding of the nature of negotiation.

There are two additional and optional phases in Smith's (2003) model which are *confirmation* <*C*> and *reconfirmation* <*RC*>. <*C*> phase is where the speaker either confirms, <*C*+> or disconfirms, <*C*-> the listener's degree of understanding based on the listener's <*RR*>. <*C*+> affords 3 possibilities for the speaker, which are *simple confirmation*, *reaffirmation*, and *comprehension check*. *Simple confirmation* is a minimal response or a form of praise, for example "OK", "Good", "Good job!", and "Great!".

Table 2.2: Example of Reaffirmation (Smith, 2003)

Utterance	**Functional Prime**
C: corkboard is similar blackboard	Response, <R>
C: do u understand?	
E: I see	Positive Reaction to Response, <RR+>
C: but corkboard have a pin	Positive Confirmation, <C+> (Reaffirmation)

Reaffirmation is an utterance where the speaker provides a bit more information to his listener. *Table 2.2* above shows an example of *reaffirmation* which was extracted from Smith (2003). Speaker C elaborated on what is a corkboard and listener E produced a *minimal positive reaction to response* <*RR*+>. The negotiation continued as C reaffirmed the negotiated element "corkboard" by uttering "but corkboard have a pin". Smith (2003) stated that the occurrence of a *simple comprehension check* has the identical reason of the *reaffirmation* occurrence in negotiation. These cases happen often due to uncertainty by the speaker that the listener has fully understood the negotiated element.

The final phase in Smith's (2003) model is the optional *reconfirmation* <*RC*> phase. <*RC*> is uttered by the listener followed by the speaker's <*C*>. It is basically no different from the *positive explicit (minimal)* <*RR*>. Normally, it consists of single words such as "OK", "Good", "Right", and "Yes". *Table 2.3* below shows the example of *comprehension check* and *reconfirmation* which was extracted from Smith (2003).

Table 2.3: Example of Comprehension Check and Reconfirmation (Smith, 2003)

Utterance	**Functional Prime**
B: what is razor? can you explain?	Indicator, <I>
A: razor is...	
A: when you want to cut your chin hair, you use it.	Response, <R>
A: it's kind of knife.	
B: I see	Positive Reaction to Response, <RR+>
A: got it?	Positive Confirmation, <C+> (Comprehension Check)
B: ok	Reconfirmation, <RC>

According to this example, the *reconfirmation* serves as a definitive signal that the negotiation detour is now over and that the conversation may resume (Smith, 2003). Smith (2003) also argued that *confirmation* and *reconfirmation* phases are very common in task-based computer-mediated communication. This is because of a demand of explicit acknowledgements of the understanding or non-understanding that computer-mediated communication elicits between the speaker and listener.

In the next section, the historical development of CALL will be discussed. It consists of three phases which are the behaviourist CALL, the communicative CALL and the integrative CALL.

2.2 Historical Development of CALL

Incorporating technology in language teaching is nothing new. Audio tape recorders were used essentially with the audio-lingual method, while video cameras and televisions came with the communicative syllabi. The use of computers in language teaching started the 1960s. According to Warschauer and Healey (1998), the development of CALL in the 40 years period (i.e. between 1960s and 1990s) can be divided into three main phases. The phases are behaviouristic CALL, communication CALL, and integrative CALL. These phases are discussed in the following sub-sections.

2.2.1 Behaviouristic CALL

According to Marty (1981), from 1960s, up until the late 1970s, CALL projects were confined mainly to universities, where computer programs were developed on large mainframe computers. The PLATO project which was implemented in the University of Illinois, marks the early development of CALL. It was designed by a group of engineers, physicists, psychologists and educators in 1959. During the 1970s, the system made considerable progress (Ahmad, Corbett, Rogers and Sussex, 1985). PLATO covered a wide range of language besides English, which included Chinese, Esperanto, French, German, Hindi, Latin, Modern Hebrew, Modern Greek, Norwegian, Russian and Swedish.

The first phase of CALL is also known as structural CALL (Warschauer & Healey, 1998) and restricted CALL (Bax, 2003). Warschauer (1996) stated that the learning process was mainly based on the then-dominant behaviourist theories of learning. Behaviourism in education is mostly associated with the work of B. F. Skinner (1978).

Skinner believed that teaching was a repetitive process of setting up reinforcement and punishment effectively to establish chains of behaviour in learning. There were three kinds of situations to shape behaviour: positive reinforcement, negative reinforcement, and punishment.

The first phase of CALL emphasised the development of basic drill and practice software. The drill and practice method was based on the behaviourist learning model (Taylor, 1980). Because repetition and response to stimuli are major tenets of behaviourism, CALL programs of this era focused on repetitive drills and practice, allowing students to learn at their own pace, with the computer acting as a mechanical tutor, continuously repeating drills (Rahimpour, 2011). The computer was viewed as little more than a mechanical tutor that never grew tired. It was serving mainly as a vehicle for delivering instructional materials to the learners. So, the first phase was also known as computer-assisted instruction.

According to Higgins (1993), the computer software packages mainly focused on the learning of vocabulary items or discrete grammar points. Computer is ideal for carrying out repeated drills and exposure to the same material. It is beneficial or even essential to learning. It can provide immediate non-judgemental feedback. The computer can also present such materials on an individualised basis. This allows learners to proceed at their own pace and freeing up class time for other activities.

However, software like PLATO system is extremely expensive, and requires high cost of maintaining the computers. The lack of imagination and creativity in designing new

and challenging exercises also resulted in the ending of the initially popular behaviouristic approach CALL.

2.2.2 Communicative CALL

The second phase was based on the communicative approach to teaching, which became prominent in the 1970s and 1980s. Bax (2003) referred this phase as the open CALL. Proponents of the communicative approach believed that the drill and practice programs of the previous decade did not allow enough authentic communication to be of much value. John Underwood (1984, p.52) who was one of the main advocates of the communicative CALL approach, proposed a series of "Premises for 'Communicative' CALL".

Communicative CALL focused more on the use of forms rather than on the forms themselves in the behaviouristic CALL (Underwood, 1984). Communicative exercises were used in the teaching where grammar was taught implicitly and learners were encouraged to generate original utterances instead of manipulating prefabricated forms (Jones & Fortescue, 1987; Philips, 1987; Warschauer, 2000). In other words, the learners' fluency in the language was highlighted and accuracy in the language was no longer the focus in communicative approach. The mainframe was replaced by personal computers to allow higher possibilities of individual work. Learners interacted with the computers and they had occasional interaction with other learners.

According to Felix (2003), the computer was used for skill practices, but in a non-drill format and with a greater degree of learner choice, control and interaction. The type of task includes simulations such as discussion, writing or critical thinking, games and

computer-mediated communication. Although communicative CALL was seen as an advance over behaviouristic CALL, it too began to come under criticism. Bax (2003) commented that the computer software implemented in the communicative CALL phase "was never communicative at all in any significant way" (p. 18). Jung (2005) proposed that the phase should be named as "post-behaviouristic". This is then followed up by the next phase of CALL.

2.2.3 Integrative CALL

In the late 1980s and early 1990s, communicative CALL was criticised for using the computer in an ad hoc and disconnected pattern and made "a greater contribution to marginal rather than central elements" of language learning (Kenning & Kenning, 1990, p. 90). Many teachers have moved away from a cognitive view of communicative teaching to a more social or socio-cognitive view that highlighted language use in authentic social contexts. Warschauer (1996) termed this new perspective on technology and language learning as integrative CALL.

Integrative CALL is the last phase of CALL. Warschauer and Healey (1998) defined the phase as follows: "In integrative approaches, students learn to use a variety of technological tools as an ongoing process of language learning and use, rather than visiting the computer lab on a once-a-week basis for isolated exercises (whether the exercises be behaviouristic or communicative)" (p. 58). In other words, various skills (listening, speaking, reading and writing) and technology are more fully integrated into the language learning process. The introduction of two important innovations, multimedia and internet marked the integrative CALL phase.

The Internet builds on multimedia technology and enables both asynchronous and synchronous communication between teachers and learners. The examples of compact disk technology with interactive capacities are CD-ROMs or DVDs, newspapers and magazines articles, radio broadcasts, short videos, movie reviews, book excerpts, emailing, online forum, audio conferencing and video conferencing. According to Warschauer (1996), the enhancement of multimedia technology and the Internet have stimulated the development of CALL. CALL now offers authentic and integrated experiences with communication in new modes in the real world.

This phase of CALL caused many changes in the paradigm flows from economic to social changes (Warschauer & Healey, 1998). Large amounts of information and communication across languages and cultures are the focuses of this phase. According to Warschauer & Healey (1998), memorisation became less important compared with the students' abilities to search, respond and adapt to changes in the learning process. The roles of teachers have also changed. Teachers are no longer the only source of language information, but the facilitator of language learning.

In summary, CALL can be categorised into three phases which are behaviouristic CALL, communicative CALL, and integrative CALL. Through the development, computer today offers a more powerful and authentic learning environment with the enhancement of multimedia technology and the Internet. Nevertheless, CALL is still a relatively new methodology for language teaching and learning of English as a Second Language. In the next section, the roles of computer in language learning and teaching is discussed.

2.3 Roles of Computer in Language Learning and Teaching

The emergence of multimedia computing and the Internet has now become an important issue confronting large numbers of language teachers throughout the world (Warschauer & Healey, 1998). The penetration of sophisticated online learning technologies into most education institutions allows students to study online as much as in-person context.

As proposed by Bruce (1990), there are two conceptions of computers' use within English language teaching which are "narrow conception" and "broader conception". A "narrow conception" sees computers as a device with some well-defined function, such as a drill of basic skills. Within this conception, the aim of examining critically on computer use is to find out the most effective computer programme for specific students populations. Meanwhile, a "broader conception" sees computers as flexible tools which can be employed in diverse ways. The focus of this conception is on the underlying educational issues and research on what role technology can best play in each specific area.

The role of computers in language learning and teaching has changed significantly in the last 40 years. Thus, it is necessary to consider how computer roles are being developed in order to understand the distinct effect of computers on English as a second language. The roles of computer is outlined in the following sections.

2.3.1 Computer as a Tutor

Under the behaviourist learning model, computer-mediated instruction is featured as repetitive language drills in CALL which is also known as drill and practice. Computer was viewed as a never grew tried or judgemental mechanical tutor which allowed students to work at an individual pace (Warschauer and Healey, 1998). This drill and practice programme takes over the human tutor's role which can provide endlessly patience and flexible supervision time that a human tutor often cannot spare the time for.

The drill and practice of CALL serves the purpose of reinforcing basic skills. According to Warschauer and Healey (1998), drill and practice plays an important role in language learning, especially in the first stages of vocabulary acquisition where students are given the same information in multiple modes (visual, aural and textual) to enhance their recognition and recall. Ahmad Jelani Shaari (2011) mentioned that by using computers in learning process, it enables the students to learn by using different methods and techniques on the same aspects. With computers, language teaching and learning can be delivered in a very different and more interesting ways, for example through games and animated graphics.

Drill and practice computer tutors have the ability to judge a student's correct and incorrect responses (Higgin & John, 1984), and have strategies for teaching how to present material, pose problems and achieve the appropriate balance between tutor-direction and support for student-directed inquiry (Bruce, 1990). The essences of computer drill and practice individualise the language learning instruction, provide

learning material at a controlled repetitive pace, monitor the learning process, record student progress and give appropriate feedback. The role of computer as an instructional tool is discussed in the next section.

2.3.2 Computer as an Instructional Tool

In a language class, many students may lose interest and motivation to learn a second language because the repetitive traditional approach that can be boring, painful, and frustrating, but not for computers. The use of computer as an instructional tool in a language class enhance the efficiency of the work of the teacher or the students. Students can use computer as a tool to develop and practice their English. According to Stephen (2003), some examples of computer as a tool include word processors, spelling and grammar checkers, desk-top publishing, and concordancers.

The word processing capabilities of computers are powerful. Sharp (2009) defined a word processor as a useful electronic writing tool for editing, storing, and printing documents. According to Bruce (1990), it can assist students in reading with speech synthesisers and online dictionaries, generating ideas and planning for writing, finding information from the databases of information such as thesaurus and dictionary, viewing a text systematically, and viewing the writing process from the computer storage for editing or re-editing session. With spelling and grammar checker, the students' spelling and grammar mistakes can be automatically corrected. For the desk-top publishing programme, the students can insert pictures into writing which make the writing process more interesting. A concordancer is a computer program that allow students to search a list of genuine texts for multiple examples of selected words or phrases. This allows the

students to easily find out the authentic usage of word collocations, word usage, or structure of a text, which is difficult to be carried out manually. The role of computer as a media is discussed in the next section.

2.3.3 Computer as a Media

Since the advent of local network and the Internet in the early 1990s, the computer is also used as a medium of global communication. This provides an authentic communication environment which has become ubiquitous in language learning.

In the beginning, the computer mediated-communication started with the local networks for document sharing within a language class. With Internet, electronic mail (e-mail), online documentation, and electronic encyclopaedia (e-encyclopaedia) are read directly from a video screen (Bruce, 1990). With the main components of Internet, world wide web (WWW), computers become the information source for teachers and students in second language learning and teaching (Ahmad Jelani Shaari, 2011). Not only for asynchronous communication, it also provides authentic synchronous communication medium to language students, for example in Yahoo messenger and Facebook Messenger. The students can communicate directly, inexpensively, and comfortably with other learners or native speakers of the target language at any time and in any place.

In Malaysia, many higher education institutions have started to adopt and implement information and communication technology (ICT) solutions, e.g: electronic learning (e-learning) as a source for flexible teaching and learning process either in the classroom or outside the classroom. As an example, Student Powered e-Collaboration

Transforming UM (SPeCTRUM) is used as the online teaching and learning platform in Universiti Malaya. Numerous activities can be conducted in the platform, such as downloading lecture notes, discussing ideas in the forum, uploading assignments and sharing of thoughts. These versatility can be found from a quote from Universiti Malaya SPeCTRUM website, "technology will never replace great teachers, but technology in the hands of a great teacher can be transformational". The role of computer in blended learning cannot be denied as it complements traditional teaching and learning approach which makes the language learning process more interesting.

As a conclusion to the roles of computers, the computer can serve a variety of uses for language teaching and learning. It can be a tutor for language drills-and-practice which is sometimes referred to as behaviourist CALL. It can also be an instructional tool which enhances the efficiency of the teachers and students in language development and language skills practice. With the local network and Internet, it becomes a medium of global communication which provides an authentic language learning environment. In order to show the features of computer assisted language learning, the advantages of CALL is outlined in the next section.

2.4 The Advantages of CALL

The current computer technology has many advantages in terms of what it can offer to second language learning. The advantages that are most highlighted by the researchers are learner-centeredness, offering language learning according to one's pace, increasing the students' motivation and decreasing their anxiety, and providing the immediate

feedback to the students in target language learning process. These advantages of CALL is discussed in the next few sections.

2.4.1 Learner-centeredness

Computer and its attached language learning programs allow second language learners to be more independent from language classroom where the learners are given the option to work on the language learning material at any time and anywhere. There is also an adjustment in the student-teacher relationship in which the domination of a teacher in a language class is decreased and they moved to the role as a guide or a facilitator (Prathibha, 2010). This helps students to become more disciplined and independent in language learning. The next section discusses how computer assisted students learn a second language according to their pace.

2.4.2 Learning According to One's Pace

Every student needs different amounts of time and practice to meet learning objectives which a language teacher cannot afford to accommodate in a language classroom due to time limitation. Computers offer a solution to this situation where students are able to perform self-instructional tasks at a speed and level dictated by their own needs, for example beginner, elementary, intermediate or advanced level band. Presentation of language materials in computers is on an individualised basis, which is without time keeping and deadlines (Tatiana Dina & Ileana Ciornei, 2013). According to Sharma & Barrett (2007), a learner can choose a lower level material than his or her official level to consolidate language and a higher level material to challenge himself or herself. The computer allows the students to access the same materials over and over again at their

own pace which is essential to acquiring a language. Another advantage of CALL which is increased motivation and decreased anxiety is discussed in the next section.

2.4.3 Increased Motivation and Decreased Anxiety

Repeated practice is often necessary in a language learning classroom to achieve learning objectives. However, tedious drills may influence the students to feel bored and frustrated in the learning process. The students lose interest and motivation to learn a second language. Learning a language with a computer enhances student's motivation level and decreases student's anxiety level (Sharma & Barrett, 2007; Prathibha, 2010; Tatiana Dina & Ileana Ciorner, 2013; Bani Hani, 2013). CALL programmes offer students novelty in which the language is taught; more interesting and attractive ways through games, animated graphics and problem-solving techniques. Using of CALL makes the language learning process exciting and fun.

Besides that, CALL also decreased students' anxiety levels. The synchronous communication in computer is slightly different from face-to-face communication, where the students have time to plan their utterances in computer environment (Prathibha, 2010). Students feel more confident to communicate in the computer environment compared to face-to-face (Tam, Kan & Ng, 2010; Ng & Sappathy, 2011). It is not surprising to observe the situation where the students' language proficiency in computer-mediated environment is much better than in normal classroom face-to-face communication. The next section discusses the immediate feedback offered by computer in language learning.

2.4.4 The Immediate Feedback

Bani Hani (2014) conducted a research and found that teachers considered computer's immediate feedback as the most important advantage in second language learning. Computer immediate feedback was more effective for lower order learning compared to delayed feedback and vice versa (Van der Kleij, Feskens & Eggen 2015). It shows that students receive maximum benefit from feedback only when it is supplied immediately. Due to many unavoidable reasons, a teacher often delay and may forget to give feedback, but computers will never delay or forget to give feedback. Nonetheless, any delay in offering negative feedback may lead students to continue having a misconception before discovering the nature of the error. The possibility of this kind of situation is very low in CALL. Computers provide immediate feedback to students which assist them to avert the misconception at the initial stage itself. This aspect relating to immediate feedback aids many aspects of language learning, especially in learning vocabulary. The next section discusses the vocabulary learning in a language.

2.5 Vocabulary

Many researchers have pointed out the importance of vocabulary learning in a language. David Wilkins, a British linguist acknowledged the importance of vocabulary with the statement, "without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (cited in Thornbury, 2002, p. 13). This view was echoed by Nunan (1991) who stated than an adequate amount of vocabulary is absolutely necessary for successful language use and emphasised that a language cannot be understood without vocabulary. The roles of language structures and language functions are indisputable,

but without vocabulary, both cannot be used for comprehension and communication purposes. Thus, it is important that students are equipped with a sufficient amount of vocabulary in the target language in order to communicate. The next section looks at the prominence given to the teaching and learning of vocabulary in the language classroom.

2.5.1 Vocabulary Teaching and Learning

Although vocabulary seems to be the most important element in a language, vocabulary teaching has for a long time been a neglected area (Taylor, 1990; Lewis, 1997; Thornbury, 2002; Lightbrown & Spada, 2006). According to Taylor (1990), in a second language classroom, priority has been given to structures or functions of target language, rather than vocabulary. Thornbury (2002) pointed out that language teachers have not extensively given recognition to the tremendous communicative advantage in developing an extensive vocabulary of target language. Besides that, there is an assumption that students learn vocabulary unconsciously or through incidental learning. As stated by Elliot (1978), vocabulary knowledge is not taught as a skill in itself. In general, vocabulary is taught indirectly by embedding it in the speaking, reading, listening or writing class. In other words, language students are expected to learn and acquire vocabulary when they read a book in a reading class or listen to the radio in a listening class. Grammar-Translation is one of the methods used in teaching vocabulary.

Grammar-Translation was the main language teaching methodology from the beginning of the nineteenth century. In a Grammar-Translation learning lesson, it is typical to have the teaching materials focused on reading and writing (Schmitt, 2000). The examples of materials were one or two new grammar rules, a list of vocabulary items, and some

practice examples to translate first language into second language or vice versa. Students were expected to learn the vocabulary through the bilingual vocabulary items list. It also made bilingual dictionaries as important tools for learning second language vocabulary.

The Direct Method was used in vocabulary teaching and learning at the end of nineteenth century which focused on the listening and speaking skills. Explicit grammar teaching was down-played and no translation was involved in the target language learning (Schmitt, 2000). In the Direct Method classroom, the focus was squarely on the use of the second language, and banished any employment of first language in the classroom. Pictures or physical demonstrations were used to explain concrete nouns, and topic grouping and association of ideas were presented to explain abstract words.

However, during World War II, Grammar-Translation and the Direct Method were found to had failed to produce American military men who were required to be orally fluent in foreign languages. With this, the "Army Method" which was later known as the Audiolingual Method, was introduced (Schmitt, 2000). Students were expected to learn the target language through drills to reinforce 'good' language habits. The class activities included close attention to pronunciation, intensive oral drilling, a focus on sentence patterns, and memorisation.

In 1972, Hymes proposed the concept of communicative competence which emphasised on the message and fluency (language appropriateness) rather than grammatical accuracy (language accuracy). According to Schmitt (2000), the language teaching approach that developed from these notions was known as Communicative Language

Teaching Method which focused on the use of language for meaningful communication. The examples of class activities were problem solving activities and information gap tasks which required the students to transact and negotiate information.

With reference to prementioned sections, it would seem that from Grammar-Translation Method to Communicative Language Teaching Method, vocabulary teaching was given secondary status, instead of being given a prominent place at this time. According to Gairns and Redman (1986), in formal learning situations, it is necessary to provide students with opportunities to practise the target vocabulary as there is a lack of opportunity to use this vocabulary outside of the language classroom. Thus, it is important for teachers to plan the vocabulary teaching and learning in a language class. The following section looks at the approaches for vocabulary teaching and learning.

2.5.2 Approaches for Vocabulary Teaching or Learning

There are two main approaches in teaching vocabulary: explicit approach and incidental learning approach. According to Schmitt (2000), any well-structured vocabulary program should be the combination of explicit teaching and activities which can stimulate incidental learning to occur during the learning process.

The approach of explicit vocabulary teaching is categorised as the most appropriate approach for beginners. With beginners, it is important for the students to have enough amount of vocabulary to start making use of the unknown words they meet in context. So, it is necessary to teach all the words explicitly before the students go further in the language learning process. Traditionally, vocabulary learning has been mostly through teacher-led in a classroom or through self-study. This kind of vocabulary learning is one-

way input where it can only provide some elements of lexical knowledge. Nation (1978) suggested some of the possibilities in explicit one-way input vocabulary teaching, which were by demonstrations (using an object, a cut-out figure, gestures, performing an action), pictures (photographs, blackboard drawings, pictures from books), and verbal explanations (description, giving a word with the same meaning, a word of opposite meaning, putting the new word in a defining context, translating into another language).

However, beyond this most basic level, incidental learning should be structured into the program in a principled way. Schmitt (2000) pointed out the importance of incidental learning in vocabulary learning where meeting a word in different context enhances quality of knowledge, and the additional exposures help to consolidate the word in the memory system. The key to an incidental learning is to make sure the students have maximum exposure to the target language (Schmitt, 2000). The most effective way to do this is to transplant the students into a country or a situation where the second language is the primary language. Milton and Meara (1995) surveyed and proved that the immersion into the second language (English) benefited the European exchange students' vocabulary knowledge in a short period of 6 months at a British university. It is deemed as a desirable approach in learning vocabulary of a second language.

Unfortunately, incidental approach is not widely available to students around the world due to reasons like the learning cost and logistic problems. Teachers have to find ways of increasing their students' exposure to the second language without getting onto an airplane (Schmitt, 2000). Interactive tasks such as negotiation of meaning or communicative activities, information-gap activity and decision making task, are one of

the alternative ways for incidental learning. The students are exposed to the second language environment, where second language acts as the primary language throughout the activity procedure. The task based activities can promote the learning of vocabulary in meaningful ways and in different contexts. This provides very good opportunities for the students to practice producing the target language. The following section discusses the relevant studies on negotiation of meaning and second language vocabulary acquisition.

2.6 Relevant Studies on Negotiation of Meaning and Second Language Vocabulary Acquisition

Previous studies had showed that negotiation of meaning enhances classroom discussion (Beauvois, 1998; Mooji, 2005) and contributes to second language development (Fernandez & Martinez, 2002). This section reviews the significant past studies which relate to negotiation of meaning, focus particularly on computer-mediated environment, and second language vocabulary acquisition.

In 2003, de la Fuente examined the acquisition of second language word meanings by comparing the synchronous computer-mediated interaction with face-to-face interaction among learners of Spanish. There were six dyads in Oral Interaction group and six dyads in Virtual Chat group. The Oral Interaction dyads interacted via phone call and Virtual Chat dyads negotiated through a synchronous chat software. The results showed that synchronous computer-mediated and oral interactions are effective in facilitating the vocabulary acquisition. However, oral interaction group showed overall higher rate than synchronous computer-mediated group in the target vocabulary items acquisition.

This indicated that oral interaction may be more beneficial than synchronous computer-mediated interaction for short-term oral second language vocabulary acquisition.

Meanwhile, Smith (2004) conducted an experimental study to determine the impact of synchronous computer-mediated negotiation of meaning and pre-emptive input to L2 vocabulary acquisition. 24 Midwestern ESL intermediate university students met once a week for five times in a scheduled class to complete jigsaw and decision-making tasks in Chatnet. The result of the study demonstrated that computer-mediated negotiation of meaning facilitated learners' capability to comprehend and generate new vocabulary items. It was supported by remarkably high scores on the immediate and delayed post-tests. This showed that synchronous computer-mediated negotiation of meaning was more effective than pre-emptive input in the receptive acquisition of L2 vocabulary items in a short and long term manner in this study.

In 2009, Lee conducted a study to examine the impact of synchronous computer-mediated negotiation of meaning in the acquisition of second language lexical. The participants were twelve intermediate level ESL Iowa State University international students and visiting scholars. There were three experimental groups: text synchronous computer-mediated group, oral synchronous computer-mediated group and face-to-face group. The Text Chat dyads interacted in Virtual Chat (a MSN messenger software), Voice Chat dyads communicated in Audacity recording software and Face-to-Face dyads negotiated face-to-face. The result of the study indicated all three conditions stimulated the acquisition of L2 vocabulary items. Nevertheless, the differences between groups and post-tests were not statistically significant.

In another study, Teng (2010) investigated the role of the synchronous computer-mediated negotiation of meaning in second language vocabulary development among twenty English as a Second Language intermediate proficiency international undergraduates. The participants interacted in Moodle online chat to accomplish the information gap activity. The results of the study proved that the negotiation routines in synchronous computer-mediated communication were different from face-to-face communication. It also demonstrated that the *split negotiation routines* in the computer-mediated interactions did not affect the learners' understanding. However, for the retention of vocabulary, there was no remarkably difference between the immediate and a week delayed post-tests.

Ng and Sappathy (2011) conducted a study to examine the relationship between negotiated interaction and the ability to retain vocabulary items. The participants were forty-eight primary school English as a Second Language learners with similar first language background. The result proved that learners who took part in one-way input task and negotiated in the interactive task obtained higher vocabulary test scores compare to learners who only took part in one-way input task.

In conclusion, all the reviewed studies proved that synchronous computer-mediated and face-to-face negotiation of meaning enhanced second language vocabulary acquisition and aided learners' retention on the target vocabulary items. However, the studies' evidences are not conclusive. Some of the critiques were, small sample size in Lee's (2009) study and the gap between immediate and delayed post-tests in Teng's (2010) study. These methodological issues are given attention in the present study which is discussed in the next chapter.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

With reference to Chapter 1, the main focus of this study is to investigate the effectiveness of synchronous computer-mediated communication of English as a second language learners' acquisition and retention of English concrete nouns. This chapter describes the research design, participants, sampling procedure, research materials, pilot study, procedure for data collection, data coding, variables, reliability and methods for data analyses.

3.1 Research Design

This study employs a mixed-method approach where both quantitative and qualitative methods were used to collect data. According to Creswell (2014), a mixed-method study allows the researcher to collect quantitative and qualitative data which provides a better understanding of the research problem than either type by itself. The combination of quantitative and qualitative data is a "powerful mix" (Miles & Huberman, 1994) that allows the researcher to develop "a complex" picture of social phenomenon (Greene & Caracelli, 1997). Quantitative data provides useful statistical information to describe the trends about a large number of people. Researcher makes generalisation of a population based on quantitative data. However, according to Rozmi Ismail (2013), quantitative data has lower validity compared to qualitative data. Qualitative data offers many perspectives on the study topic and provides explanation on the complex picture of the

situation. Thus, mixed-method approach is a good research design which builds on the strength of quantitative and qualitative data.

Many academic researchers seek an inclusive research methodology to explore the research questions. According to Riazi and Candlin (2014), in academic disciplines, the appeal of mixed-method approach is growing and proving valuable for a wide range of researchers. In some studies, one type of research, quantitative or qualitative is not enough to address the research problems or answer the research questions. As mentioned by Tashakkori and Teddlie (2003) it is important to find what is appropriate in relation to specific research questions.

In this study, mixed-method approach was used to provide a more detailed and comprehensive picture. This is because one type of research (quantitative or qualitative) is not enough to answer the research questions. To answer Research Question 1, the researcher needs to find out the learners' retention level in the English vocabulary acquisition between synchronous computer-mediated group and face-to-face group. This involves quantifiable data (pre-test, immediate post-test and delayed post-test scores) from the participants. Statistics is used to analyse the data. Therefore, quantitative method from positivism research paradigm is used to determine the effectiveness of synchronous computer-mediated and face-to-face interactions in second language vocabulary retention.

Meanwhile, qualitative method from interpretative research paradigm is used to answer Research Question 2 and Research Question 3. These research questions ask about the ratio of negotiation of meaning in terms of turns and discourse features employed by the

participants in synchronous computer-mediated and face-to-face interaction. It is about the nature of synchronous computer-mediated and face-to-face negotiation of meaning. The collected data is qualitative in nature which is consisted of audio recording of face-to-face conversations and records of online chat log of interactive tasks. The analysis of the qualitative data involves data coding using Smith's (2003) Model which can be referred to in *Figure 2.2* and Smith's (2003) Subcategorising of Negotiation Routine Primes Integrated Approach which can be referred to in *Table 3.8*. The next section outlines the participants of this study.

3.2 Participants

The participants for this study were 32 first-year students from the University of Malaya. The participants in this study were between 19 and 21 years of age. They were comprise of 11 males and 21 females. They had completed a minimum of 12 years and a maximum of 16 years of learning English as a second language. The participants were from different faculties and major areas of studies. *Table 3.1* below shows the distribution of the participants in terms of faculty and major area of study. They had different ethnic backgrounds and mother tongues. *Table 3.2* below shows the ethnic background and mother tongue of the participants.

Table 3.1 Distribution of the Participants in terms of Faculty and Major Area of Study

Faculty	Major Area of Study	No. of Participant, n
Faculty of Science	Statistics	4
	Biology	3
	Actuarial Science	3
	Mathematics	2
	Chemistry	2
	Biotechnology	1
		Total: 15
Faculty of Computer Science and Information Technology	Software Engineering	2
	IT Management	1
	Technology Networking	2
	Artificial Intelligent	1
		Total: 6
Faculty of Law	Law	4
		Total: 4
Faculty of Languages and Linguistics	French	4
		Total: 4
Faculty of Education	Teaching English as a Second Language	2
		Total: 4
Faculty of Engineering	Civil Engineering	1
		Total: 1

Table 3.2: Ethnic Background and Mother Tongue of the Participants

Ethnic Background	No of Participant, n	Mother Tongue	No of Participant, n
Malay	2	Malay	2
Chinese	29	Mandarin	26
		Hakka	1
		Hokkien	1
		Cantonese	1
Bidayuh	1	Bidayuh	1
	Total: 32		**Total: 32**

The highest education level of the participants were Matriculation (n= 10) and Malaysian Higher School Certificate (STPM) (n= 22). The participants obtained the result of either Band 3 (n= 14) or Band 4 (n= 18) in the Malaysian University English Test (MUET). In order to ensure that the negotiated task is meaningful, it is deemed crucial that the participants are not familiar with auto parts names. Thus, the selection of participants was based on a pre-selection test on vocabulary of parts of car. The next section will provide the explanation on the sampling procedure that is used in this study.

3.3 Sampling Procedure

The sampling procedure used in this study is non-probability sampling. According to Chua (2012a), non-probability sampling is a plan of action used to choose samples based on specific characteristics from the population when all the subjects do not have equal probability to be selected as research participants. There are several types of non-probability sampling procedures: accidental or convenience sampling, purposive sampling, quota sampling, snowball sampling, dimensional sampling, critical case sampling and maximum variation sampling (Chua, 2012a). In this study, snowball sampling procedure was used in the selection of samples.

Snowball sampling is a sampling procedure in which the researcher asks participants to identify and suggest others who have appropriate characteristics to become members of the sample (Creswell, 2014). As the scope of this study is only assessing the first year students with average results, the pre-identified participants are first-year UM undergraduates who had obtained either Band 3 or Band 4 in MUET. The snowball sampling method was used due to the reason that the researcher was unable to obtain a

list of the members of the population of first-year UM undergraduates with similar characteristics. In this procedure, the researcher identified and approached 8 participants with the characteristics that the researcher wanted to study. Then, this group of participants was asked to identify and suggest the other 24 participants from the population with the same characteristics for the sample. The next section outlines the research materials of this study.

3.4 Research Materials

This section describes the research materials of this study. The pre-study questionnaire contains 9 items that collect the demographic aspects of the participants which can be referred to in *Appendix 2*. The pre-selection test, pre-test, information gap activity and post-tests in this study are adapted from Lee's (2009) study. The pre-selection test, pre-test, immediate and delayed post-test are similar. The tests contain 24 pictures of auto parts and blank spaces for participants to write down the auto part names which can be referred to in *Appendix 4*.

The task type used in this study was information gap activity. According to Pica et al. (1993), among various types of tasks, the most effective tasks in terms of generating negotiation of meaning are information gap activity and jigsaw tasks. In information gap activity, it is a one-way task where information flows only in one direction. For example, Participant A holds all the information in this study and is required to complete a task. Participant A's partner, Participant B may produce negative feedback, including negotiation moves such as indicator and reaction to response when he has not understood his partner's speech.

The choice of using auto parts as items in the tests is because of the set of words that we use regularly in daily life. On 1 October 2014, Malaysian government implemented the new car driving curriculum (Sinchew Daily, 18 December 2014). The aim of the curriculum is to generate high quality drivers as they possessed the correct skills in vehicle driving. One of the additional components is "Rutin Pemeriksaan Kenderaan" (RPK) in car driving test where the learners are required to check the parts of car, i.e., license plate, front light, tail light, windshield, side mirror and bonnet. Due to this, auto parts were chosen as the topic in the interactive tasks. Acquiring a driving license is seen as an important event in one's life. Pawasarat (2007), the director of UWM's Employment & Training Institute pointed out that driver's license is a vital link to employment. Thus, it is crucial for fresh graduates to have this skill when they enter the job market. For the participants of this study who are yet to obtain a car driving license, there is hope that they will acquire vocabularies about parts of car through negotiation of meaning before they apply for a car driving test.

The information gap activity of this study consists of 4 main tasks: Task A and B for Treatment 1 and Task C and D for Treatment 2 which can be referred to in *Appendix 5*. The 24 auto part pictures are divided equally in the task sheets. In other words, 8 vocabulary items are allocated in each task sheet. According to Teng (2010), in order to prevent the participants from identifying the pictures based on the factors of colours or position rather than their current English proficiency level, the positions of the pictures in Task Sheets A-3 and D-3 are different from Task Sheets B-3 and C-3 and the images are different from the Task Sheet A-1, C-1, B-1 and D-1.

A set of interview questions can be referred to in *Appendix 3*. The 2 open-ended questions were used to identify the perceptions of the participants pertaining to synchronous computer-mediated and face-to-face interactive activity in their learning of English auto parts. The interview results was used to support the explanation for the research questions in this study. The next section presents the discussion regarding the pilot study for this study.

3.5 Pilot Study

The aim of the pilot study is to test the suitability of the auto parts items used in the information gap activity. There were 5 participants in the pilot study. Five Year 1 students from University of Malaya were randomly selected to take part in the pilot. They are from the Faculty of Science, Faculty of Engineering and Faculty of Computer Science and Information Technology. Their age range was 18 to 20 years old. They are Chinese and their first language is Mandarin language. They are not included in the actual pool of sample to avoid sample contamination.

Before the pilot study started, the introduction and goal of the test were explained to the participants, i.e. the participants were informed that the activity aimed to gather information on the current English vocabulary knowledge on auto parts. There were twenty-four pictures of auto parts and twenty-four blank spaces in the test sheet. The participants were required to name the auto parts in English in the blank spaces provided. After the briefing session, the participants were given twenty minutes to finish the test. Discussion and reference to dictionary were not allowed in the test. The maximum score of the test is 24 and minimum is 0. In scoring, only the auto parts spelt

in correct spellings are considered correct and awarded one point while other answers are given zero point. The result of the pilot test is tabulated in the *Table 3.3* below.

Table 3.3 Pilot Study Participants' Genders, MUET Scores and Test Scores

Participant	Gender	MUET Score (Band)	Test Score (Total Score= 24)
1	Female	4	10
2	Female	3	3
3	Female	3	5
4	Male	4	8
5	Male	3	4

In a good test, according to Adkins (1974), "the mean difficulty of the items should be such that 50 percent of the students get them right and 50 percent get them wrong" (p. 73) in order to test individual differences effectively. In other words, no student should obtain maximum and minimum total score in a pre-test in order to assume that the test is not too easy or too difficult for the students. Referring to *Table 3.3*, the lowest obtained test score was 3 (percentage=12.5%) and the highest was 10 (percentage=41.67%). This shows that the current vocabulary knowledge of the participants in the pilot study on the auto parts was low. The mean score, $\bar{x}$ is 6 and the standard deviation, σ is 8.5. No students obtained 24 (maximum score) or 0 (minimum score) in the pilot test. Hence, it is assumed that the test is suitable to be used in this study.

After the participants finished the test, they attended a group interview session. During the session, they shared their opinions, thoughts and experiences regarding the test. According to Huseyin Mahmutoglu and Zahide Kicir (2013), the use of mother tongue encourages the learners who have limited vocabulary in the target language to

participate and allows learners to express themselves more efficiently. Due to this reason, the interviews were conducted in the participants' first language, Mandarin. The participants' opinions, thoughts and experiences were listed down on a piece of paper.

Based on the results of this pilot study, some minor adjustments were made. The pictures of windshield and sun visor were changed as students claimed that they were not clear. The students were also confused with the pictures of headlight and taillight. Improvements were made by adding yellow circles to indicate the specific parts. Besides that, the time allocation for the test was decreased to 15 minutes as all of the participants finished the test within 15 minutes.

The next section discusses the actual data collection procedure. The procedure of data collection for the actual data collection presented in the form of a flow chart in *Figure 3.1*.

3.6 Data Collection Procedure

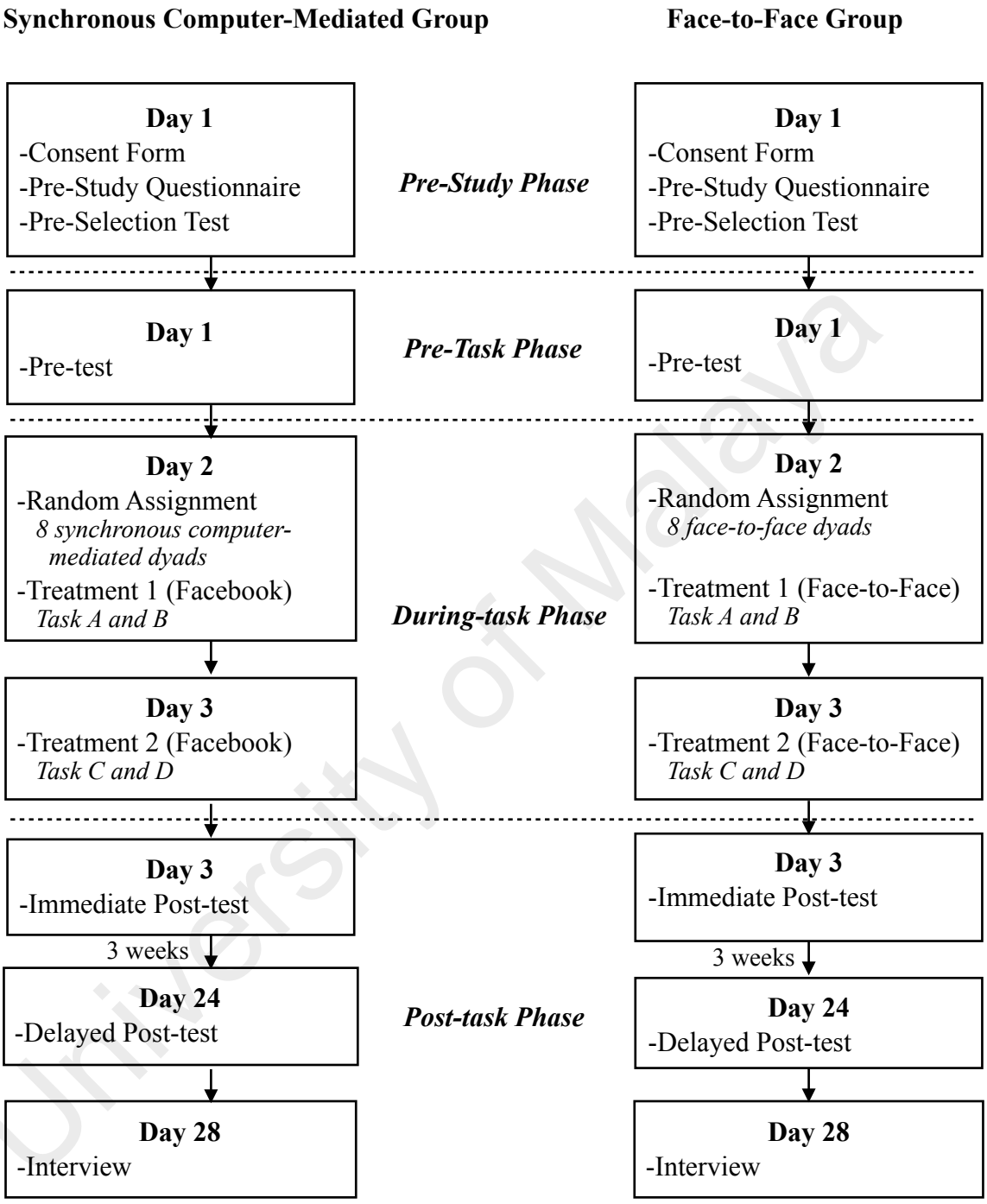
Due to the logistics problem and differences in the participants' class schedule, the participants of synchronous computer-mediated and face-to-face groups were accommodated into 6 sessions. *Table 3.4* below shows the sessions and division of participants of synchronous computer-mediated and face-to-face groups.

Table 3.4: Sessions of Computer-Mediated and Face-to-Face Groups

Session	Group	No. of Participant
1	Synchronous computer-mediated	12
2	Synchronous computer-mediated	4
		Total: 16
3	Face-to-Face	6
4	Face-to-Face	4
5	Face-to-Face	2
6	Face-to-Face	4
		Total: 16

Figure 3.1 below shows the overview of data collection procedure of this study. The overview is presented in the flow chart form in order to have a clearer pictures of the two groups and phases.

Figure 3.1: Overview of Data Collection Procedure



The participants were given the choices to choose which session they wanted to join. For example, Student A was randomly assigned to synchronous computer-mediated group and chose to join Session 1, he had to join the session throughout the data collection procedure. The data collection procedure were divided into 4 phases: pre-study, pre-task, during-task and post-task phases. Each session comprised all the 4 phases. The next sub-sections will outline the 4 phases of the data collection procedure.

3.6.1 Pre-study Phase

A set of pre-selection test was administered in the recruitment of participants. Day 1, in the pre-study phase, the introduction and goals for the study were explained to the participants during a briefing session. It was to learn English vocabulary about auto parts. After that, a set of consent form (refer to *Appendix 1*) and pre-study questionnaire were administered to obtain their consent and demographic information.

3.6.2 Pre-task Phase

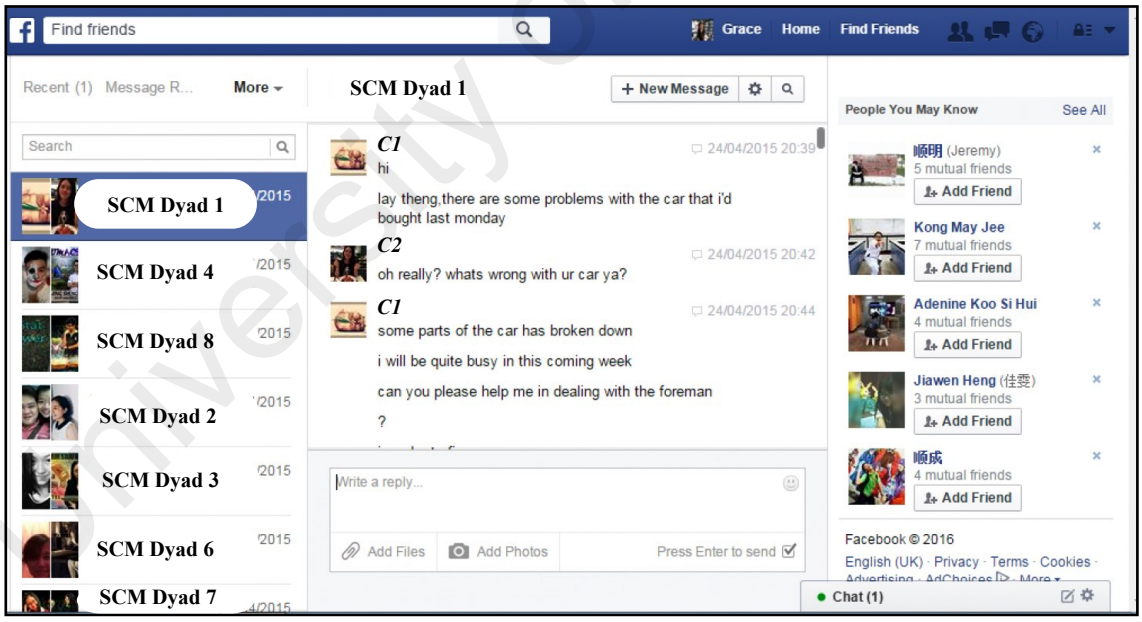
The pre-task phase was also in Day 1. All the participants sat for a pre-test which contained twenty-four vocabulary items. They were required to fill in the blanks with the correct answers based on their understanding of the given auto part pictures. One point was awarded for each correctly spelt answer.

3.6.3 During-task Phase

In Day 2, the participants were randomly assigned to synchronous computer-mediated group and face-to-face group. In this study, all Band 3 and Band 4 participants were

treated as intermediate English proficiency learners. According to Shanthi Nadarajan (2013), Band 3 and Band 4 participants are categorised into intermediate group and analysis can be done without differentiating them to low and high intermediate participants. There were 8 synchronous computer-mediated dyads and 8 face-to-face dyads. Treatment 1 (Task A and B) was performed in Day 2 and Treatment 2 (Task C and D) was performed in Day 3. They were given 15 minutes to complete the information gap activity. For the synchronous computer-mediated dyads, each of the participants sat in front of a computer and communicate with their partners in Facebook Inbox Messenger. *Figure 3.2* below shows the example of Facebook Inbox Messenger Interface.

Figure 3.2: Example of Facebook Inbox Messenger Interface



Note: Actual names of the participants have been made anonymous to adhere to research ethics.

The synchronous computer-mediated participants sat far away from their partners to avoid face-to-face communication. The researcher was in all the chat boxes but only for

the assessment of the chat logs. For the face-to-face dyads, they sat together with their partners, but far away from the other dyads to avoid distraction. Their conversations were recorded with an audio recorder.

3.6.4 Post-task Phase

In the post-task phase, the immediate post test was administered immediately after the during-task phase on Day 3. In a number of studies (Haynie, 1994; Haynie, 1997; de la Fuente, 2002; de la Fuente, 2003; White & Demil, 2013) a delayed post-test was administered three weeks after an immediate post-test to measure retained knowledge. So, in line with that, this study ensured that there was a lapse of 3-weeks before conducting a delayed post-test. The participants were given 15 minutes to complete both the post-tests. One mark was awarded to each correctly spelled answer. The interview was conducted after a few days of delayed post-test to 13 randomly selected participants who participated in the Treatment 1 and Treatment 2. The interview was conducted via Facebook Chat. This was due to the fact that the participants had to attend classes and they had on going examinations. The results of the interviews in the Facebook chat log was transcribed using a word processor software. Data coding procedure is presented in the next section.

3.7 Data Coding

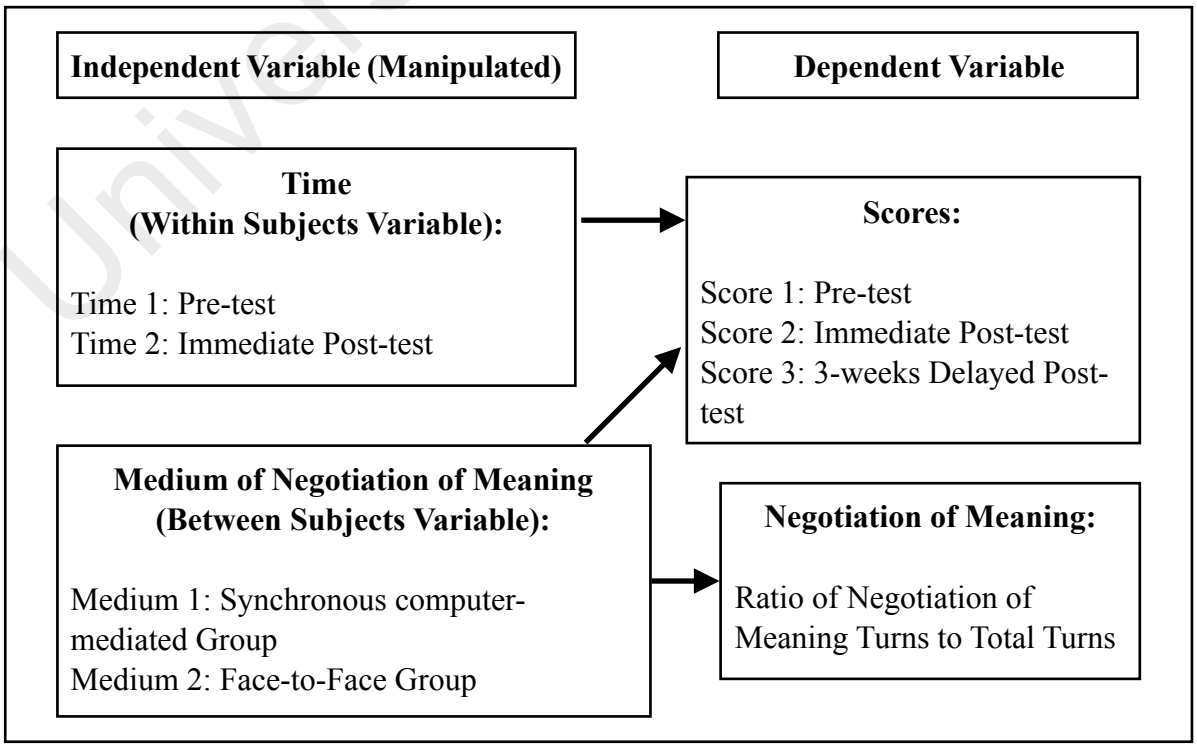
The conversations of synchronous computer-mediated group in Facebook were in the form of chat logs. The researcher copied and pasted the chat logs from the Facebook to word processor software for the usage of offline data coding, while the conversations of face-to-face group during the interactive tasks was audio recorded using a handphone's

audio recorder. All the synchronous computer-mediated and face-to-face groups' conversations were transcribed. There was a total number of 8 synchronous computer-mediated and 8 face-to-face transcriptions. The synchronous computer-mediated and face-to-face transcriptions were coded based on Smith's (2003) Model (refer to *Section 3.10.2*) and Smith's (2003) Subcategorising of Negotiation Routine Primes Integrated Approach (refer to *Section 3.10.3*). Independent and dependent variables of this study are discussed in this next section.

3.8 Variables

The relationship between the independent variables and dependent variables of this study is presented in *Figure 3.3* below. The independent variable is the variable which can be manipulated and the dependent variable is the variable which is measured in this study.

Figure 3.3 Independent Variables and Dependent Variables



There were two independent variables: one was the within-subjects variable (time: pre-test, immediate post-test and three-weeks delayed post-test); the other was the between-subjects variable (medium of negotiation of meaning: synchronous computer-mediated environment and face-to-face). There were two dependent variables: one was the continuous dependent variable, scores on the vocabulary test (pre-test, immediate post-test and three weeks delayed post-test), and the other was the ratio of negotiation of meaning turns for total turns. The next section is the discussion on the reliability of this study.

3.9 Reliability

According to Chua (2012a), the triangulation method is one of the strategies which can be used to increase the reliability of a qualitative research. There are three triangulation methods and they are, a) using a number of different researchers, b) conducting the research at different times, and c) conducting the research at different locations. In this study, the approach of using a number of different researchers was adopted to increase the reliability of this study. Graziano & Raulin (2014) explained that there should be at least two independent raters to code the same sample of measurement to increase the inter-coder reliability. In the context of this study, the transcriptions were coded by the researcher and another rater (X). The rater X is a student from the University of Malaya who is currently pursuing Masters of English as a Second Language programme at the Faculty of Languages and Linguistics.

Chua (2013) explained that usually 10% to 20% of the data is used to evaluate the inter-coder reliability. In this study, the researcher decided to randomly select 8 transcriptions

(4 synchronous computer-mediated and 4 face-to-face) which were 12.5% of the data to evaluate the inter-coder reliability. The coding scheme was prepared to list out the standard instructions regarding the process to code the data. According to Chua (2013), the Cohen's kappa value of inter-rater (or inter-coder) agreement among the researchers was calculated to determine reliability among researchers after Rater X completed the coding for the data based on the prepared coding scheme. The Cohen's kappa value between the researcher and the rater X is presented in *Table 3.5* below.

Table 3.5: Cross-tabulation between Coding of the Researcher and the Rater X

	Average of Cohen's Kappa Value	**Approx. Sig.**
Occurrences of Negotiation of Meaning Routine Prime	0.830	0.000
Total Numbers of Turns and Negotiated Turns	1.000	0.000
Occurrences of Trigger Prime Subcategories	1.000	0.000
Occurrences of Indicator Prime Subcategories	0.946	0.000
Occurrences of Response Prime Subcategories	0.911	0.000
Occurrences of Reactions to the Response Prime Subcategories	0.892	0.000

The average kappa values shown in the table above are in the range of 0.830 to 1.000. According to Chua (2013), the kappa value of 0.70 and above signifies that the data has a satisfactory level of reliability among the coders. If a kappa value is lower than 0.70, the coders need to be trained in order to achieve a consistent reading. In line with this, the results shown in *Table 3.5* indicated that the kappa values between the researcher and the rater X are in the satisfactory level of reliability (kappa > 0.70). Thus, there is no need for the researcher and the rater X to be trained for the second coding procedure.

A detailed view of inter-rater reliability can be referred to in *Appendix 6*. The next section discusses the data analysis of the research questions.

3.10 Data Analysis

Table 3.6 below shows the source, relevant data and analysis in answering all the research questions. It explains the plan to analyse the collected data from the relevant sources in order to answer the corresponding research questions.

Table 3.6: The Research Questions, Source, Relevant Data and Analysis

Research Question	**Source**	**Relevant Data**	**Analysis**
1. Is there a significant difference between synchronous computer-mediated group and face-to-face group in ESL learners' retention level in the acquisition of English vocabulary?	Pre-test and Post-test	Test Score	Calculate the score of - Pre-test - Immediate post-test - Delayed post-test **Split-Plot Analysis of Variance (SPANOVA)
2. Is there a significant difference between synchronous computer-mediated interaction and face-to-face interaction in the ratio of negotiation of meaning in term of turns?	Synchronous computer-mediated & Face-to-face transcriptions	Negotiation of meaning turns	Identify negotiation of meaning routine primes <T>, <I>, <R>, <RR>, <C>, <RC> according to Smith's (2003) Model (Refer to *Figure 2.2*) Calculate - Negotiated turns - Total number of turns **The ratio of negotiation of meaning turns for total turns

Table 3.6 continued: The Research Questions, Source, Relevant Data and Analysis

Research Question	Source	Relevant Data	Analysis
3. What are the differences in terms of discourse features employed by the ESL learners during synchronous computer-mediated and face-to-face negotiation of meaning in information gap activity?	Synchronous computer-mediated & Face-to-face transcriptions	Negotiation of meaning Routine primes	- Subcategorise the primes based on Smith's (2003) Model (Refer to *Table 3.8*) **The frequency of the prime subcategories

3.10.1 Research Question 1

Is there a significant difference between synchronous computer-mediated group and face-to-face group in ESL learners' retention level in the acquisition of English vocabulary?

To answer Research Question 1, pre-test, immediate post-test and delayed post-test scores were calculated. The possible total score for all the tests was 24. In scoring, only correctly spelled word was awarded one point.

Split-plot analysis of variance (SPANOVA) was conducted to determine the learners' retention level in the acquisition of English vocabulary between synchronous computer-mediated group and face-to-face group. Split-plot analysis of variance is also known as mixed between-within subjects analysis of variance (Tabachnick & Fidell, 2007). It is the combination of between-subjects and within-subjects analysis of variance designs. Between-subjects analysis of variance is comparing two or more different groups in the same analysis. Meanwhile, within-subjects analysis of variance is also known as

repeated measures design. It is a design where one group of participants is exposed to two or more conditions.

In this study, between-subjects analysis of variance was used to compare the effects of synchronous computer-mediated negotiation of meaning and face-to-face negotiation of meaning on new English vocabulary retention based on the results of immediate post-test and three-weeks delayed post-test. Meanwhile, within-subjects analysis of variance was used to determine the effectiveness of negotiation of meaning on English vocabulary short-term and long-term retentions based on the results of immediate post-test and three-weeks delayed post-test in synchronous computer-mediated group and face-to-face group.

Statistical Product and Service Solutions (SPSS) was used to conduct this analysis. The software name originally stood for Statistical Package for Social Sciences, reflecting the original market. SPSS is a widely used statistical software by a lot of researchers (Wang, Teng & Chen, 2015; Asiah Kassim & Ng, 2014; Akram Kazemi & Mehry Haddad Narafshan, 2014; Abdullah Sarani & Leila Farzaneh Sahebi, 2012; Ng & Sappathy, 2011; Zhao & Bitchener, 2007). It allows effective and systematic data management which can reduce the flaws that happen when researcher manages the data manually with a pen on papers. SPSS also provides wide range of options in presenting the analysed data, for example, bar charts, pie charts and histograms. Most importantly, SPSS allows researcher to combine the between-subjects and within-subjects variables in a single analysis. These are the key reasons why SPSS is the best option to use to analyse the quantitative data in this study.

3.10.2 Research Question 2

Is there a significant difference in the ratio of negotiation of meaning in term of turns between synchronous computer-mediated interaction and face-to-face interaction in information gap activity?

To answer Research Question 2, the process of interactive task sessions was carried out. The transcriptions of the face-to-face group were completed by listening to the audio recordings. The synchronous computer-mediated group transcriptions were retrieved from the Facebook chat logs. After completing the entire process of transcription, a final check for accuracy was conducted.

Nvivo computer-assisted qualitative data analysis software was used to conduct this analysis of Research Question 2 and Research Question 3. The software has many advantages and may significantly improve the quality of research (AlYahmady Hamed Hilal & Saleh Said Alabi, 2013). Nvivo reduces a great number of manual tasks and gives the researcher more time to discover tendencies, recognise themes and derive conclusions (Wong, 2008). The researcher only need to highlight the part of text or audio recording via the mouse and pull the highlighted part to the identified label. Beside that, Nvivo allows multiple codes to the same part of the text or audio. Nvivo makes the qualitative data coding process easy and systematic compared to manual data coding technique.

After the final check for accuracy of all transcriptions, the negotiation of meaning routine primes “Trigger” <T>, “Indicator” <I>, “Respond” <R> and “Reaction to Respond” <RR> were identified using the Smith’s (2003) Model which can be referred

to in *Figure 2.2*. There are two parts in the negotiation of meaning sequences which are deemed as trigger and resolution. A <T> is a part of an utterance or an utterance of the speaker which signed an incomprehensible situation to the listener. An <I> is an essential component as it must exist in the resolution part. An <I> is a signal from the listener to the speaker to indicate that he or she is confused about the speaker's ideas. Without this <I> component, the speaker will never know that the listener is confused about his ideas. While, an <R> and an <RR> may or may not be found in the resolution part. A <R> will only happen when the speaker attempts to make some clarifications of the ideas. When the listener gives response that he or she has achieved the realisation of the idea, then it is deemed as an <RR>.

After the identification of negotiation of meaning routines, the number of turns within these negotiations of meaning routines and the total number of turns of each transcription were identified. According to Smith (2003), a turn occurs when there is a shift of floor from one participant to another and negotiated turn is a turn which happens in the negotiation of meaning sequences. *Table 3.7* below shows the example of how turns were identified in a negotiation routine.

Table 3.7: Negotiated Turns in a Negotiation of Meaning Sequence

O:	Okay. So, my second word is contraption. Contraption is a kind of measurement, equipment that look very strange.	Turn 1
P:	Measurement that look?	Turn 2
O:	Measurement or equipment that look very strange and funny.	Turn 3
P:	Okay, I get it.	Turn 4

The "direct comparison of number of negotiation of meaning sequences across groups may be sensitive to the amount of talk produced by the dyads in each group" (Arslanyilmaz & Pedersen, 2010, p. 72). It was proven in the Arslanyilmaz's study (2007) which found that students who received the treatment produced more talk than students who did not receive the treatment. In this study, dyads in the synchronous computer-mediated and face-to-face groups may produce more negotiation of meaning sequences, not because they are involved in a higher rate of negotiation of meaning, but because they produce more talk. To resolve this issue, Arslanyilmaz & Pedersen (2010) proposed that "the total number of negotiated turns in a negotiation of meaning sequence shows the amount of negotiation of meaning occurred in that negotiation of meaning sequence" (p. 71). In line with this, the ratio of negotiation of meaning turns for total turns was calculated in this study to compare the amount of negotiation of meaning produced in synchronous computer-mediated and face-to-face environments.

3.10.3 Research Question 3

What are the differences in terms of discourse features employed by the ESL learners during synchronous computer-mediated and face-to-face negotiation of meaning in information gap activity?

In answering Research Question 3, the analysis of synchronous computer-mediated and face-to-face discourse features, the negotiation of meaning routines were identified and analysed based on Smith's (2003) Subcategorising of Negotiation Routine Primes Integrated Approach, as shown in *Table 3.8*. The frequencies of all negotiation routine

prime subcategories is calculated, and then compared between the synchronous computer-mediated and face-to-face groups.

Table 3.8: Smith's (2003) Subcategorising of Negotiation Routine Primes Integrated Approach

Primes of the Negotiation Routines	**Prime Subcategories**	**Definitions**
Triggers	Lexical	A specific lexical item causes the incomprehensible expression
	Morphosyntactic	A structural or grammatical construction causes the incomprehensible expression
	Discourse	The incomprehensible expression lacks general consistency
	Content	The whole content of the earlier message is unclear
Indicators	Global Strategies	The participant points out the incomprehensible with the identification of a trigger
	Local Strategies	The participant clearly recognizes the trigger or points out its specific position in the utterance
	Inferential Strategies	The participant performs hypotheses –testing and signs incomprehension
Responses	Minimal	The participant simply says the trigger again or acts in response
	Stating an Inability to Respond	The participant is incapable of resolving the problems in the trigger
	Restating Trigger with Lexis Adjustment	The participant makes an effort to clarify the intended meaning without addressing the indicated problem where there is no large difference between the length of the response and the trigger
	Rephrasing or Elaboration	The participant may demonstrate the nature of the incomprehensible lexical item, and more contexts may be provided

Table 3.8 continued: Smith's (2003) Subcategorising of Negotiation Routine Primes

Integrated Approach

Primes of the Negotiation Routines	Prime Subcategories	Definitions
Reactions to the Response	Minimal	A clear expression of comprehension
	Metalinguistic Talk	The participant comments clearly the reason for the incomprehensible expression
	Task Appropriate Response	Expressions that are contextually appropriate to the conversation and not directly show the amount of comprehension of the target item present
	Testing Deductions	The participant responds to the current input presented in the response part and makes assumptions and tries out their present state of knowledge regarding the initial incomprehensible expression
Confirmation	Simple Confirmation	A minimal response or in the form of praise
	Reaffirmation	The participant provides a bit more information of the negotiated item
	Confirmation Check	A minimal response to check the participant's confirmation
Reconfirmation	Reconfirmation	It happens after the participant's confirmation, a minimal response in a word form or in the form of praise, it serves as the definitive signal of the end of conversation

Note: Adopted from Smith (2003, p. 43).

The next chapter, Chapter 4 is a description of the results of the study. The collected quantitative and qualitative data are also analysed and discussed in the next chapter to interpret the findings.

CHAPTER 4

RESULTS AND FINDINGS

4.0 Introduction

The main objective of this study is to investigate the effectiveness of synchronous computer-mediated interaction in vocabulary acquisition in comparison with face-to-face interaction. This chapter presents the results of the data analysis which is organised in accordance with the research questions of this study. It is divided into two main parts. The first part addresses the first research question which is a discussion on the vocabulary test scores. The second part addresses the second and third research questions which describe the production of negotiation of meaning and the employment of discourse features by the intermediate proficiency students in the interaction activity.

4.1 Interpretation of Quantitative Data

In this study, the quantitative data comprises of the vocabulary test scores. A total of three sets of scores were gathered to answer the first research question. A pre-test and two post-tests were administered immediately and three weeks after the second treatment. The descriptive and inferential statistics were carried out to interpret the vocabulary test scores to answer the first research question. The data was analysed using Statistical Product and Service Social (SPSS) version 22. The advantages and reasons of SPSS to analyse the quantitative data can be referred to in *Section 3.10.1*. The next section is the baseline analysis which was first carried out in this study.

4.1.1 Baseline Analysis

Before answering the first research question, a baseline analysis on the pre-test scores of both groups was carried out. The aim of the analysis is to examine the homogeneity of variances and equality of covariances to determine whether the participants belonged to the same proficiency level. The results of the test are summarised in the *Table 4.1* and *Table 4.2* below.

Table 4.1: Descriptive Statistics for Baseline

Group	n	Mean, $\overline{x}$	Standard Deviation, s
Synchronous Computer-Mediated	16	6.88	3.862
Face-to-Face	16	4.38	2.335

Table 4.2: Homogeneity of Variances and Equality of Covariances

Levene's Test of Equality of Error Variances		Box's Test of Equality of Covariance Matrices	
F	Sig.	F	Sig.
2.809	0.104	2.087	0.051

The significance value in Levene's Test Equality of Error Variances was 0.104, which was bigger than the alpha value, 0.05. Meanwhile, Box's Test of Equality of Covariance Matrices showed that the significance value, 0.051 which was also bigger than the alpha value, 0.001. In these cases, the assumption of homogeneity of variances and equality of covariances had not been violated. It was assumed that the samples were obtained from the population of equal variances and covariances which meant that the variability of scores of each of the groups was similar. It can be concluded from the results above that the subjects shared a similar level of proficiency. Thus, the two groups were deemed

comparable prior to the treatment. The result of the normality test is presented in the next section.

4.1.2 Normality Test

The normality test is important as it determines the type of statistical test to be used in this study due to the fact that most of the statistical tests rest upon the assumption of normality (Pallant, 2007). In line with this statement, a normality test was conducted. *Table 4.3* below shows the results of the normality test.

Table 4.3: Skewness and Kurtosis Test

	n	Skewness		Kurtosis	
		Statistic	Standard Error	Statistic	Standard Error
Pre-test	32	1.164	0.414	1.328	0.809
Immediate Post-test	32	-0.170	0.414	-0.842	0.809
Delayed Post-test	32	-0.980	0.414	-0.056	0.809

The skewness value of pretest was 1.164, immediate post-test was -0.170 and delayed post-test was -0.980. Meanwhile, the kurtosis value of pretest was 1.328, immediate post-test was -0.842 and delayed post-test was -0.056. According to Chua (2012b), when a set of data which is considered as in a normal distribution, the value of skewness and kurtosis have to be in between of +1.96 and -1.96. Referring to the table of skewness and kurtosis test above, all values of skewness and kurtosis were located in between ±1.96. It can be concluded that the distribution of data in this study is normal. As stated by Chua (2014) and Pallant (2007), parametric test should therefore be carried out to analyse normally distributed data. Thus, in this study, a parametric test was

conducted. The next section discusses the parametric test used to answer the first research question.

4.2 Research Question 1

Is there a significant difference between synchronous computer-mediated group and face-to-face group in ESL learners' retention level in the acquisition of English vocabulary?

In this study, there is one between-subjects variable (medium of negotiation of meaning: synchronous computer-assisted environment and face-to-face) and one within-subjects variable (time: pre-test, immediate post-test and three-weeks delayed post-test). According to Chua (2014), a split-plot analysis of variance (SPANOVA) can be used to obtain the mean differences between two or more independent groups whilst subjecting participants to repeated measures.

SPANOVA allows the researcher to combine one way within-subjects analysis of variance (ANOVA) and one way between-subjects ANOVA in one analysis. These two different approaches could be calculated separately. Often it is more efficient to combine both types of ANOVA into one analysis and study the two factors simultaneously rather than separately. Interactions between factors can then be investigated with SPANOVA design.

In order to answer the first research question, there is a need to examine the impact of the two interventions (synchronous computer-mediated environment and face-to-face environment) on the participants' scores of the vocabulary test, across three time periods

(pre-intervention, immediate post-intervention, and 3-week follow up post-intervention) via the use of SPANOVA. The level of statistical significance obtained in this study is called probability value, that is the p-value. The alpha value of this study was set at $p < 0.05$. The discussion of the interaction effect is presented in the next section.

4.2.1 Interaction Effect

There is a need to access the interaction effect for the synchronous computer-mediated and the face-to-face groups to determine whether both groups undergo same changes in scores over time. It is deemed necessary as the results of interaction effect influence the ways one would interpret the main effect (Pallant, 2007). According to Chua (2014), Pillai's Trace is the most commonly reported statistics in multivariate test. Hence, Pillai's Trace statistics is reported in order to inform the interaction effect. *Table 4.4* below shows the multivariate test of time against group.

Table 4.4: Interaction Effect

Effect	Value	F	Error Degrees of Freedom, Error df	Significance Value, Sig.	Partial Eta Squared
Pillai's Trace	0.17	3.06	29.00	0.06	0.174

Referring to *Table 4.4*, the significance level was 0.06, which was greater than the alpha level of 0.05. In this case, the interaction effect of time against group was not statistically significant. There was no significant interaction effect between group and time in this study. Pallant (2007) explained that if there is no significant interaction, it means that the impact of one variable is not influenced by the level of the second variable. Therefore, the impact of within-subjects variable is not influenced by the level of between-subjects variable. It can be concluded that there was no change in the

vocabulary scores over time as a result of interaction between the synchronous computer-mediated and the face-to-face groups. As recommended by Pallant (2007), when the interaction effect is not significant, the discussion can then proceed with the main effects of each independent variables in this study. The main effect is discussed in the following section.

4.2.2 Within-Subjects Effect

In this study, there are two main effects which include the within-subjects effect (time) and between-subjects effect (group). The result of within-subjects effect showed whether there was a change in vocabulary test scores across the three different time periods statistically. The Pillai's Trace statistics is reported for the purpose of reporting the within-subjects effect, as stated in Chua (2014). The within-subjects effect of this study is presented in the *Table 4.5* below.

Table 4.5: Within-Subjects Effect

Effect	Value	F	Error Degrees of Freedom, Error df	Significance Value, Sig.	Partial Eta Squared
Pillai's Trace	0.938	217.78	29.00	0.00	0.938

The table above shows that the value for within-subjects effect for three periods of time is 0.938, with significance value of 0.00, which actually means $p < 0.0005$. As the p-value is less than the alpha value, 0.05, it can be concluded that the main effect for time was statistically significant. This suggests that there was a significant change in vocabulary test scores across the three different time periods. The main effect for time was significant. However, as reported by Pallant (2007), this does not mean that the difference has any practical or theoretical significance. This may be due to the large

samples and even very small differences between the groups, can cause the reading to become statistically significant.

According to Pallant (2007), one way to assess the importance of the finding is to calculate the effect size (p. 207-208). It is also known as strength of association which related to the degree to which the two variables are associated with one another. The most common reported effect size statistics is partial eta squared (Pallant, 2007). The effect size guidelines proposed by Cohen (1988, p. 284-287), where 0.01= small effect, 0.06= moderate effect, and 0.14= larger effect were adopted to interpret the effect size in this study. The observed partial eta squared value for within-subjects effect was 0.938. This suggests a very large effect size. It can be concluded that the within-subjects effect of this study in terms of effect for time and effect size was large and statistically significant.

The results of this study is similar to the previous studies conducted on the negotiated interaction for acquisition of vocabulary, whereby the negotiation of meaning facilitates the acquisition of second language vocabulary. It validated de la Fuente's (2003) claims that synchronous computer-mediated and face-to-face interactions are effective in facilitating the vocabulary acquisition. Similarly, Smith's (2004) study proved with empirical data regarding the remarkably high scores on the immediate and delayed post-tests in which synchronous computer-mediated negotiation of meaning facilitated learners' capability to comprehend and generate new vocabulary items. According to Atkinson and Shiffrin (1968), information from the environment forms into a temporary short-term storage which served as an antechamber to the more durable long term memory. This study's results provided the same initial evidence as Smith's (2004) study

that negotiated interaction may facilitate second language vocabulary acquisition, at least in the short term memory. The next section discusses the between-subjects effect of this study.

4.2.3 Between-Subjects Effect

This section discusses the between-subjects effect of this study. The between-subjects effect presents the effectiveness of the synchronous computer-mediated and the face-to-face negotiation of meaning in vocabulary retention. The between-subjects effect is presented in the *Table 4.6* below.

Table 4.6: Test of Between-Subjects Effect

Mean Square	F	Significance Value, Sig.	Partial Eta Squared
28.167	1.016	0.322	0.033

The significance value as shown in the test of between-subjects effect was 0.322. This was more than the alpha level (0.05). So, it can be concluded that the main effect of group was not significant. The partial eta square (refer to *Section 4.2.2*) value for group in this study was 0.033. This indicated that the effect size for group was very small and did not reach statistical significance. It can be concluded that there was no significant difference in the learners' retention level in the acquisition of English vocabulary between the synchronous computer-mediated group and the face-to-face group.

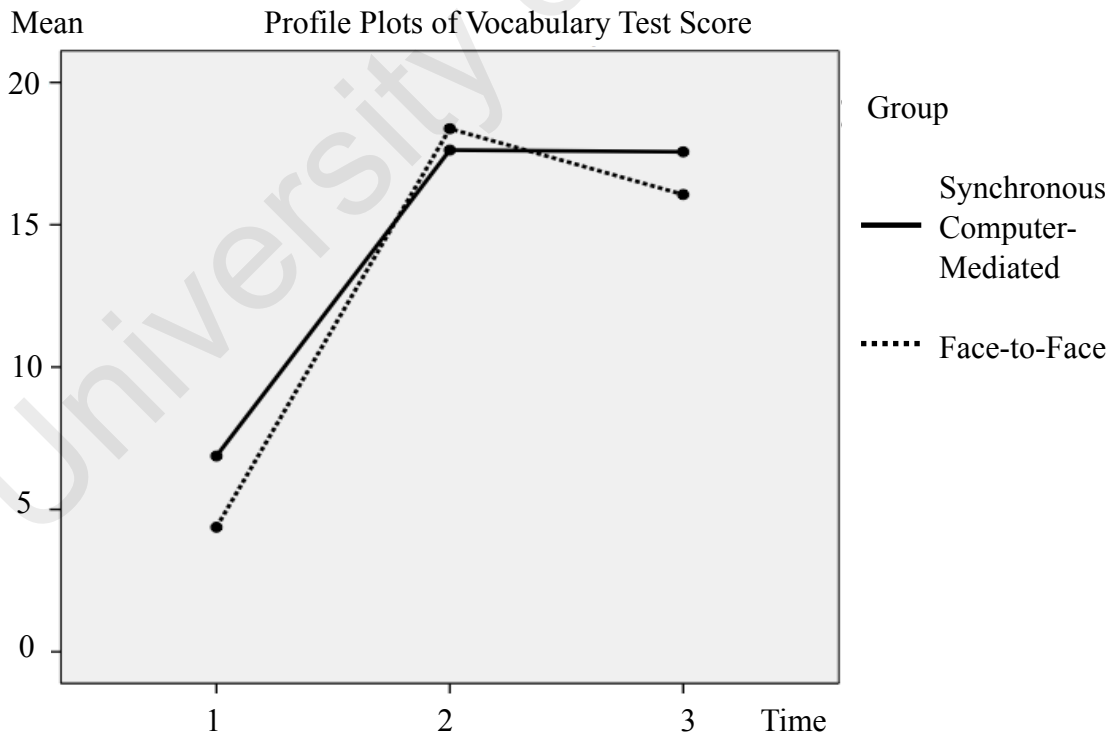
The results of between-subjects effect indicated that the synchronous computer-mediated environment have the same effectiveness as the face-to-face environment in the learners' retention level in the acquisition of English vocabulary. It was believed that

the phenomenon due to the short period of time frame between Day 3 (immediate post-test) and Day 24 (delayed post-test), which only had a gap of 3 weeks (21 days) in this study. The phenomenon is discussed with the profile plots in the next section.

4.2.4 Profile Plots

It was proven that there was no significant difference in the between-subjects effect as a whole. The discussion on the profile plots of the vocabulary scores provided a comparison of the vocabulary scores of both groups in the three periods of time. *Figure 4.1* below shows the profile plots of vocabulary test scores against three time periods of both groups.

Figure 4.1: Profile Plots



The profile plots showed the trend of vocabulary test scores of the participants in this study. In the first part of the graph, the graph patterns of the synchronous computer-mediated (SCM) group and the face-to-face (F2F) group in mean of vocabulary test scores were the same. The mean of vocabulary test score in the immediate post-test (Time 2) for both groups increased sharply after pre-test (Time 1). It can be concluded that the effect on the participants' vocabulary acquisition was high after the interaction activity in the synchronous computer-mediated and the face-to-face groups.

In the second part of the graph, the mean of vocabulary test scores of the synchronous computer-mediated group remained at the same level as the immediate post-test in the delayed post-test (Time 3), while there was a gradual downward trend in the face-to-face group in the mean score of the vocabulary test in the delayed post-test compared to immediate post-test.

Statistically, it was concluded that there was no significant difference between the two groups in the learners' English vocabulary acquisition. Yet, the profile plots demonstrated that the synchronous computer-mediated group's vocabulary retention level was slightly better than the face-to-face group in the delayed post-test. The concept of involvement load proposed by Laufer and Hulstijn (2001, p.15) may explained this, whereby the lexical "which are processed with higher involvement load will be retained better than lexical which are processed with lower involvement load" (p. 15). The synchronous computer-mediated dyads can scroll up and down in the Facebook Chat interfaces to read their partners' previous utterances. This encourages the dyads to have better comprehension of the previous utterances before asking for more clarifications. It is deemed that synchronous computer-mediated environment

offers higher involvement load environment which enhances the learners' vocabulary retention. The next section discusses the second research question which is the production of negotiation of meaning in term of turns.

4.3 Interpretation of Qualitative Data

In this study, there were a total number of 64 transcriptions. *Table 4.7* below shows the distribution of transcriptions.

Table 4.7: Distribution of Transcriptions

Group	Task A	Task B	Task C	Task D	Total
Synchronous Computer-Mediated	8	8	8	8	32
Face-to-Face	8	8	8	8	32
Total	16	16	16	16	64

There were 16 dyads: 8 synchronous computer-mediated dyads and 8 face-to-face dyads. Each pair of participants produced 4 sets of transcription as they took part in the Task A, B, C, and D. There were a total number of 64 transcriptions. The transcriptions were analysed using Nvivo version 9, a computer-assisted qualitative data analysis software produced by QSR International. The reasons of using Nvivo to analyse the qualitative data can be referred to in *Section 3.10.2*. The next section discusses the negotiation routines primes found in the transcriptions.

4.3.1 Negotiation of Meaning Routine Primes

Prior to answering the second research question, the negotiation of meaning routine primes were identified and labelled in all the transcriptions. This step is conducted in order to enable the identification of the negotiation of meaning routine primes. Without the use of computer-assisted qualitative analysis software, Nvivo, it was impossible to identify the negotiation of meaning turn in the transcriptions. The negotiation of meaning routine primes had been identified using Smith's (2003) negotiation of meaning coding framework which was *"Trigger" <T>*, *"Indicator" <I>, "Respond" <R>,"Reaction to Respond" <RR>, "Confirmation" <C>*, and *Reconfirmation <RC>*. *Table 4.8* below shows the occurrences of negotiation of meaning routine primes for the synchronous computer-mediated and the face-to-face groups.

Table 4.8: Occurrences of Negotiation of Meaning Routine Primes

Negotiation of Meaning Routine Prime	Occurrence	
	Synchronous Computer-mediated	Face-to-Face
Trigger, T	45	147
Indicator, I	91	205
Response, R	89	210
Reaction to Response, RR	76	278
Confirmation, C	43	148
Reconfirmation, RC	33	96
Total	377	1084

Referring to *Table 4.8*, there were 45 *triggers*, 91 *indicators*, 89 *responses*, 76 *reactions to response*, 43 *confirmations*, and 33 *reconfirmations* in the synchronous computer-mediated environment. Meanwhile, there were 147 *triggers*, 205 *indicators*, 210

responses and 278 *reactions to response*, 148 *confirmations*, and 96 *reconfirmations* in the face-to-face environment. The result showed that all the negotiation of meaning routine prime occurrences of the face-to-face group were higher than the occurrences in the synchronous computer-mediated group.

This phenomenon happened due to the characteristics of the synchronous computer-mediated environment that forced the participants to negotiate differently to complete the same information gap activity. *Excerpt 1* and *Excerpt 2* below are the extracts from Synchronous Computer-Mediated Dyad 1 and Face-to-Face Dyad 1. In the two excerpts, both dyads were negotiating on the meaning of 'odometer' in the Treatment 1 Task A.

Excerpt 1: Example of Negotiated Meaning in Synchronous Computer-Mediated Dyad 1

C1: Oh yes!
thank you very much in advanced.
Ok. Here's the problem.
The odometer of my car is not functioning at all **…<T>**

C2: sorry. can u please explain what is odometer? **…<I>**
I am not sure what is that

C1: Oh, sure.
Odometer shows the distance that we have traveled. **…<R>**

C2: okok. i get it **…<RR+>**
so just need to fix the odometer?

Excerpt 2: Example of Negotiated Meaning in Face-to-Face Dyad 1

F1: The first one is odometer. Odometer is to record the meter,you know? **…<T>**

F2: First thing? **…<I>**

F1: Odometer **…<R>**

F2: Odo… **…<RR->**

F1: meter. **…<C+>**

F2: meter. What is the function? **…<I ii>**

F1: How far the car travel, it will record the km, kilometer. **…<R ii>**

F2: Ok…and then? next. **…<RR+>**

In *Excerpt 1*, Synchronous Computer-Mediated Dyad 1 completed the negotiation of meaning in 4 turns and Face-to-Face Dyad 1 completed it in 8 turns, as shown in *Excerpt 2*. The negotiation of meaning sequence of Synchronous Computer-Mediated Dyad 1 was <*T*>, <*I*>, <*R*>, and <*RR+*>. It was shorter as compared to Face-to-Face Dyad 1 which had <*T*>, <*I*>, <*R*>, <*RR-*>, <*C+*>, <*I ii*>, <*R ii*>, and <*RR+*> in the negotiation of meaning sequence. Besides that, Face-to-Face Dyad 1 re-negotiated with "*Indicator ii"* and "*Respond ii"* after the "*Confirmation"* was made by participant F1. This was due to Face-to-Face Dyad 1 cannot view the spelling of the target vocabulary 'odometer' like what happened in the Synchronous Computer-Mediated Dyad 1, who carried out in the Facebook Chat interface. So, Face-to-Face Dyad 1 negotiated on the spelling first and followed by the meaning of the target vocabulary. The comparisons above indicated that in order to complete similar task, there was a need for the face-to-

face group to produce more negotiation of meaning routine primes compared to the synchronous computer-mediated group.

The findings in this study are similar to the ones in Fernandez-Garcia and Arbelaiz's (2002, p. 279-294) research. It was found that the non-native speaker and native speaker group negotiated in the oral mode significantly more than in the written mode in the computer-mediated environment. Similar results were observed in Yuksel and Inan's (2014, p.1-22) research. The face-to-face environment created more negotiation of meaning routine primes compared to the synchronous computer-mediated communication. The next section provides the comparison whether the face-to-face interaction produced more negotiation of meaning in terms of turns compared to the synchronous computer-mediated interaction in information gap activity.

4.4 Research Question 2

Is there a significant difference between synchronous computer-mediated interaction and face-to-face interaction in the ratio of negotiation of meaning in term of turns?

As explained in *Section 3.10.2* (refer to page 58), Arslanyilmaz & Pedersen (2010) pointed out that the direct comparison of negotiation of meaning between two groups may not be accurate due to the quantity of produced talk. The calculation of ratio is good as it removes the impact of the produced talk from the total of negotiation of meaning produced by dyads (Arslanyilmaz & Pedersen, 2010). According to Arslanyilmaz and Pedersen (2010), "the total number of negotiated turns in a negotiation of meaning sequence shows the amount of negotiation of meaning occurred in that negotiation of meaning sequence" (p. 71). In line with this, to answer the second

research question, the negotiated turns and the total number of turns of each dyad were calculated using Nvivo version 9. The aim of the analysis is to assess the ratio of negotiation of meaning in terms of turns in the two environments (synchronous computer-mediated environment and face-to-face environment). The data collected from the transcriptions will be discussed in the next section.

4.4.1 Negotiation of Meaning Turns

The Nvivo software was also used to identify negotiation of meaning turns in the transcriptions. According to Smith (2003), a turn occurs when there is a shift of floor from one participant to another, while negotiated turn is a turn which happens in the negotiation of meaning sequences. *Table 4.9* below shows the total number of negotiated turns and turns of each dyad in the synchronous computer-mediated and the face-to-face groups.

Table 4.9: Negotiated Turns and Total Turns

Group	Dyad	Negotiated Turn	Turn
Synchronous Computer-Mediated	1	50	64
	2	49	55
	3	43	43
	4	45	67
	5	49	72
	6	24	34
	7	48	53
	8	43	50
	Total	351	438
Face-to-Face	1	201	219
	2	61	83
	3	132	143
	4	245	254
	5	165	239
	6	192	233
	7	134	182
	8	204	342
	Total	1334	1695

According to *Table 4.9*, it was observed that the negotiated turns and turns of all the synchronous computer-mediated dyads were lesser than the face-to-face dyads. The total number of negotiated turn and turn in the synchronous computer-mediated group were 351 and 438. Meanwhile, the total numbers of negotiated turn and turn in the face-to-face group were 1334 and 1695, which was more or less four times more than the synchronous computer-mediated group. The result indicated that the face-to-face environment encouraged the participants to communicate more compared to the synchronous computer-mediated environment. However, this does not indicate that the

amount of negotiation of meaning for the face-to-face group is higher than the synchronous computer-mediated group. This can be explained in *Excerpt 3* below.

Excerpt 3: Example of Redundant Speech Produced in Face-to-Face Dyad 5

F10: The last one is trunk, trunk! **…<T>**

F9: **Trunk is the dragon ball one mah!**

F10: **I am ordering auto parts, not playing dragon ball**

F9: **Ok, trunk is t-r-u-n-k …<I>**

F10: **Ah ya! T-r-u-n-k! …<R>**

F9: **Oh, but that is true with the dragon ball one, at internet**

F10: **Ok…**

F9: Trunk is which part of the car? **…<I ii>**

F10: Trunk is the back one, for you to put luggage **…<R ii>**

F9: Oh…back one to put luggage **…<RR+>**

Referring to the excerpt above, the fact that the Face-to-Face Dyad 5 produced more negotiation of meaning sequences does not mean that they were involved in a higher rate of negotiation of meaning, but it only indicates that they produced more talk about *'dragon ball'*. As can be seen, a big chuck of interaction happened to be redundant talk that took place during the process. Therefore, the direct comparison of negotiation of meaning sequences between two groups may not be accurate due to the amount of redundant speech produced (Arslanyilmaz & Pedersen, 2010). The calculation of ratio is considered a good indicator as it removes the effect of the amount of talk from the amount of negotiation of meaning produced by dyads (Arslanyilmaz & Pedersen, 2010).

Hence, the ratio of negotiation of meaning turns for the total turns was calculated to compare the amount of negotiation of meaning produced in the synchronous computer-mediated and the face-to-face interactions which will be discussed in the following section.

4.4.2 The Ratio of Negotiation of Meaning Turns for Total Turns

The ratio of negotiation of meaning turns for the total turns was calculated to compare the amount of negotiation of meaning produced in the synchronous computer-mediated and the face-to-face interactions. The result is shown in *Table 4.10* below.

Table 4.10: The Ratio of Negotiation of Meaning Turns for Total Turns

Group	Total Negotiated Turn	Total Turn	Ratio of Negotiated Turns for Total Turns
Synchronous Computer-Mediated	351	438	0.801
Face-to-Face	1334	1695	0.787

Referring to the result shown in *Table 4.10*, the ratio of negotiation of meaning turns for total turns for both groups were quite similar; synchronous computer-mediated group was 0.801, meanwhile it was 0.787 for the face-to-face group. It validated Yanguas's (2012) research which stated that the mean percentage of negotiated turns in the conversations for the face-to-face group was quite similar to the synchronous computer-mediated group. However, the results in this study indicated that the amount of negotiation of meaning in the synchronous computer-mediated group is slightly higher than the face-to-face group. Thus, it can be concluded that the synchronous computer-mediated environment stimulates slightly higher production of negotiation of meaning,

which directly contributes toward comprehension of participants, compared to the face-to-face in the information gap activity.

This phenomenon happened due to the fact that the synchronous computer-mediated environment provides a conducive medium for the participants. The environment encourages the learners to 'speak' English with their partners during the interactive activity, which boosts the high amount of negotiated turns in the negotiation of meaning. This explanation is supported by the interview results. 7 randomly selected synchronous computer-mediated and 6 face-to-face participants who took part in Treatment 1 and Treatment 2 were interviewed via Facebook Chat after the delayed post-test. *Interview Outcome 1* is an excerpt of some of the answers from the participants for the question "How do you feel when you were having interactive activities with your friend?".

Interview Outcome 1: Synchronous Computer-Mediated Interaction as Conducive Medium

C1: …It is really relaxing…

C6: …more comfortable when you dont *(don't)* have to face ppl.

C14: Comfortable…

As proposed by Krashen (1985), in second language learning, the learners' feelings of apprehension and physiological responses directly increase their anxiety levels. In this study, the keywords "relaxing" and "comfortable" were used by the synchronous computer-mediated participants to describe their feelings in the interactive activities.

The conducive medium in synchronous computer-mediated environment reduces the students' anxiety in learning English as a second language. This validated the other researchers' argument in which students feel more comfortable to communicate online compared to face-to-face (Tam, Kan & Ng, 2010; Ng & Sappathy, 2011). The negotiation of meaning makes the learning process more interesting. When the learners face problems in learning new vocabulary, the negotiation of meaning encourages them to interact with each other to look for solutions. The discussion for the third research question is presented in the next section.

4.5 Research Question 3

What are the differences in discourse features in term of triggers, indicators, responses, and reactions to response employed by the ESL learners during synchronous computer-mediated and face-to-face negotiation of meaning in information gap activity?

The negotiation of meaning routine primes were identified and analysed based on Smith's (2003) Subcategorising of Negotiation Routine Primes Integrated Approach which can be referred to *Table 3.8* in *Chapter 3*. According to Smith's (2003), there are 4 subcategories of *triggers*: *lexical*, *morphosyntactic*, *discourse*, and *content*; 3 subcategories of *indicators*: *global strategies*, l*ocal strategies* and *inferential strategies*; 4 subcategories of *responses*: *minimal*, *stating an inability to respond*, r*estating trigger with lexical adjustment*, and *rephrasing or elaboration*; 4 subcategories of *reactions to the response*: *minimal*, *metalinguistic talk*, *task appropriate response*, and *testing deductions*; 3 subcategories of *confirmations*: *simple confirmation*, *reaffirmation*, and *confirmation check*; and a category of *reconfirmation*: *reconfirmation*. The occurrences

of all negotiation routine prime subcategories were calculated, and then compared between the synchronous computer-mediated and the face-to-face groups. Examples are included to explain each of the subcategories which are found in the participants' interactions. The next section discusses the negotiation routine prime subcategories.

4.5.1 Negotiation Routine Prime Subcategories

The occurrences of negotiation of meaning prime subcategories are presented individually based on the negotiation of meaning primes. The discussions are divided into 6 parts, which are *triggers*, *indicators*, *responses*, *reactions to response*, *confirmations*, and *reconfirmations* prime subcategories. The discussion of *trigger* prime subcategories is outlined in the next section.

4.5.1.1 Trigger Prime Subcategories

Table 4.11 below shows the occurrences of *trigger* prime subcategories in the synchronous computer-mediated and the face-to-face groups. There were 3 subcategories found in the transcriptions which were *lexical*, *discourse*, and *content triggers*.

Table 4.11: Occurrences of Trigger Prime Subcategories

Negotiation of Meaning Primes	Primes Subcategories	Occurrences in Synchronous Computer-Mediated Group	%	Occurrences in Face-to-Face Group	%
Trigger	Lexical	47	92.16	132	94.96
	Content	4	7.84	5	3.60
	Discourse	0	0	2	1.44
	Total	51	100	137	100

There were 47 *lexical triggers* (92.16%) and 4 *content triggers* (7.84%) in synchronous computer-mediated group. Meanwhile, there were 132 *lexical triggers* (94.96%), 5 *content triggers* (3.60%) and 2 *discourse triggers* (1.44%) in the face-to-face group. In terms of percentage, more than 90% of *triggers* are traced in the synchronous computer-mediated and the face-to-face environments were *lexical triggers*. This phenomenon happened due to the nature of the information gap activity Task A, B, C, and D in Treatment 1 and 2, which focused on the auto parts lexical. *Excerpt 4* below is the example of *lexical trigger* in Synchronous Computer-Mediated Dyad 7. Participant C14 were confused about the lexical "cow-catcher" and asked for explanation from Participant C13 by asking the question "what's cow-catcher?".

Excerpt 4: Example of *Lexical Trigger* in Synchronous Computer-Mediated Dyad 7

C13: (y)*(thumb up)*
Hello
My car has some problem here
The **cow-catcher**, odometer, windshield, license plate, bonnet and **… <T>**
speedometer need repair

C14: what problem?
what's cow-catcher?== **…<I>**

C13: Erm.. I have no idea. So I need you to repair them haha

C14: walao wehhhh*(Manglish means "an exclamation of amazement")*

C13: Er

The cow-catcher is the thing in front of the car **…<R>**

C14: odometer?

okk **…<RR>**

Excerpt 5 below shows the example of *content trigger* which was found in Synchronous Computer-Mediated Dyad 6. Participant C11 explained "speedometer" to Participant C12 by elaboration of "meter that shows km/h". But, Participant C12 did not quite comprehend as he found a number of pictures with km/h in the Task Sheet A-3. This had created a *trigger* as the entire content of previous message was not clear. According to Smith (2003), c*ontent trigger* occurs due to the whole content of the earlier message is unclear. It requires the interlocutors to elaborate more on the *triggers* in the negotiation of meaning (as shown in *Excerpt 5*) which may contribute to vocabulary learning. This indirectly indicates that the amount of *content triggers* serves as indicators that can be linked to vocabulary learning. The percentage of *content triggers* of the synchronous computer-mediated group (7.84%) is higher than the face-to-face group (3.60%). This indicates that the synchronous computer-mediated group stimulates higher amount of *content triggers* which lead the learners to elaborate more and it may contribute to vocabulary learning.

Excerpt 5: Example of *Content Trigger* in Synchronous Computer-Mediated Dyad 6

C11: bonnet is the cover of the enine

the front part of the car

engine*

Last picture is speedometer

meter that shows km/h …<T>

u understand or not????

C12: there is a lot with km/h **…<I>**

C11: that MPH km/h picture

:P

only one meter **…<R>**

get it??

C12: ok i got it **…<RR>**

Excerpt 6 below is the example of *discourse trigger* identified in Face-to-Face Dyad 1. In the negotiation of meaning, Participant F1 tried a few times to pronounce "ignition key hole", but the participant failed to pronounce it and declared that he did not know about the pronunciation of the auto part. It caused Participant F2 failed to understand the auto part which was mentioned by Participant F1. This had created incoherence in the discourse and caused a long delay between the participants. Finally, Participant F2 suggested to Participant F1 spell out the auto part name as a solution. Therefore, it is evident that the higher percentage of discourse trigger is linked to instances of incomprehension between the interlocutors. *Discourse trigger* refers to the problematic sentence which lacks general coherence of the discourse or conversation (Smith, 2003). In this study, *discourse triggers* are only found in the face-to-face group. It suggests that the face-to-face group prompts the communication problem between the interlocutors which causes them to take a longer time to negotiate meaning.

Excerpt 6: Example of *Discourse Trigger* in Face-to-Face Dyad 1

F1: **Number two is igni…ignition key hole…ignition, I am not sure about the pronunciation …<T>**

F2: Spelling? **…<I>**

With reference to the results in *Section 4.5.1.1*, the synchronous computer-mediated negotiation of meaning encourages the learners to produce more *content triggers* and less *discourse triggers* compared to the face-to-face environment. It is reasonable to conclude that the learners communicate more efficiently in the synchronous computer-mediated environment compared to the face-to-face environment. The next section discusses the *indicator* prime subcategories.

4.5.1.2 Indicator Prime Subcategories

Table 4.12 shows the occurrences of *indicator* prime subcategories in the synchronous computer-mediated and the face-to-face groups. The *indicators* subcategories were *global strategies*, *local strategies*, and *inferential strategies*.

Table 4.12: Occurrences of Indicator Prime Subcategories

Negotiation of Meaning Primes	Primes Subcategories	Occurrences in Synchronous Computer-Mediated Group	%	Occurrences in Face-to-Face Group	%
Indicators	Global Strategies	5	4.95	56	29.63
	Local Strategies	51	50.50	104	55.03
	Inferential Strategies	45	44.55	29	15.34
	Total	101	100	189	100

The percentage of occurrences of *local strategies indicators* in both groups were quite similar which were 50.50% for the synchronous computer-mediated group and 55.03% for the face-to-face group. According to Smith (2003), the large amount of *local strategies indicators* in the synchronous computer-mediated and the face-to-face groups reflected the imperative for direct and precise signalling in negotiating the puzzling utterance. It shows in *Excerpt 7* below whereby Participant C6 informed Participant C5 of six auto parts and Participant C5 indicated the *trigger* explicitly to request for clear explanation on the auto part "dashboard" from Participant C6.

Excerpt 7: Example of *Local Strategies* in Synchronous Computer-Mediated Dyad 3

C6: my turn la...

1. fuel meter
2. Road wheel
3. Exhaust pipe
4. rearview mirror
5. Dashboard **…<T>**
6. Trunk

C5: **Could you explain more about the dashboard? I'm afraid I don't know what that is. …<I>**

C6: there is where all the meter there..

speedmeter*(speedometer)*… fuel meter..

all there.. **…<R>**

Referring to *Table 4.12* (refer to page 85), the percentage of *global strategies indicators* occurrences in the face-to-face group was higher (29.63%) than the synchronous computer-mediated group (4.95%). *Excerpt 8* and *Excerpt 9* below are examples of *global strategies* found in the synchronous computer-mediated and the face-to-face groups. Referring to the examples, the face-to-face dyads had to work harder in the negotiation of meaning as the environment prompts higher level of incomprehension between the interlocutors. This is the cause of high occurrence of *global strategies indicators* in the face-to-face group compared to the synchronous computer-mediated group.

Excerpt 8: Example of *Global Strategies* in Synchronous Computer-Mediated Dyad 7

C14: Good afternoon. I am Ms.C14 from GIANT AUTO FACRORY*(FACTORY)*.

Our factory are now great need of some auto parts for new cars.

The things that I want to order are :-

1. fuel meter

2.road wheel

3.exhaust pipe

4.rearview mirror

5. dashboard

6.trunk

Do you understand clear what I want? **…<T>**

C13: **Sorry, I do not understand. Can you explain them to me? … <I>**

C14: okay

what part u didn't understand? **…<R>**

Excerpt 9: Example of *Global Strategies* in Face-to-Face Dyad 6

F11: Odometer **…<T>**

F12: **What? …<I i>**

F11: Odometer

F12: **How to spell? …<I ii>**

F11: Same like the speed meter, but don't have the speed **…<R> <T>**

F12: **Don't have what? …<I>**

F11: You change the speed… **…<R>**

F12: Just o-d-o, and then meter? **…<RR+>**

F11: Yes yes yes! **…<C+>**

As shown above, the participants in the face-to-face group spent more turns sorting out the basis of negotiation as compared to the synchronous computer-mediated group. Meanwhile, the percentage of *inferential strategies indicators* occurrences in the synchronous computer-mediated group was higher (44.55%) than the face-to-face group (15.34%). *Excerpt 10* below is an example of *inferential strategies* in Face-to-Face Dyad 1. Inferential strategies are related to the participants' attempts to figure out the meaning of the target vocabulary based on their prior knowledge about the auto parts. The higher percentage of *inferential strategies* in the synchronous computer-mediated

group is linked to the fact that the environment encourages the learners to test out their hypotheses. As shown in *Excerpt 10*, Participant C14 used his prior knowledge of using a "roof rack" to put on a bicycle to confirm his idea of "roof rack" with Participant C13.

Excerpt 10: Example of *Inferential Strategies* in Synchronous Computer-Mediated Dyad 7

C13: Sun visor is on the passenger seat. You can put them down to avoid the sunlight from blocking your view
Roof rack is on top of the car. It is used for placing things that cant fit into your car **…<T>**

C14: **roof rack? usually ppl put bicycle d? …<I>**

C13: haha yup **…<R>**

C14: ohh okk **…<RR>**

With reference to the results in *Section 4.5.1.2*, the synchronous computer-mediated negotiation of meaning encourages the learners to produce more *inferential strategies* and less *global strategies* compared to the face-to-face environment. It can be concluded that the learners' communications in the synchronous computer-mediated environment are clearer and it encourages them to test out their hypotheses more frequently compared to the face-to-face environment. The next section discusses the *responses* prime subcategories.

4.5.1.3 Response Prime Subcategories

Table 4.13 below shows the occurrences of *response* prime subcategories. *Minimal responses*, *stating an inability to respond*, *restating trigger with lexical adjustment*, and r*ephrasing or elaboration* were identified from the transcriptions.

Table 4.13: Occurrences of Response Prime Subcategories

Negotiation of Meaning Primes	Primes Subcategories	Occurrences in Synchronous Computer-Mediated Group	%	Occurrences in Face-to-Face Group	%
Responses	Minimal	31	29.81	65	27.20
	Stating an Inability to Respond	1	0.96	3	1.26
	Restating Trigger with Lexical Adjustment	3	2.88	75	31.37
	Rephrasing or Elaboration	69	66.35	96	40.17
	Total	104	100	239	100

The percentage of *minimal responses* occurred in the synchronous computer-mediated group (29.81%) and the face-to-face group (27.20%) was quite similar. The same phenomenon also happened when it comes to *stating an inability to respond* in both groups, whereby the percentages were 0.96% in the synchronous computer-mediated group and 1.26% in the face-to-face group. *Excerpt 11* and *Excerpt 12* are examples of *minimal response* and *stating an inability to respond* from the synchronous computer-mediated and the face-to-face transcriptions. The low occurrences of *minimal response* and *stating an inability to respond* are linked to the participants inability to provide further information or addressing the fundamental issue underlying the trigger.

Therefore, as Smith (2003) pointed out, they were not very useful for clarifying the meaning of the target vocabulary.

Excerpt 11: Example of *Minimal Response* in Synchronous Computer-Mediated Dyad 2

C3: parking brake is the one we commonly called handbrake? **…<I>**

C4: **Yes it is. …<R>**

C3: alright. i thk*(think)* i know all the parts you mentioned. **…<RR+>**

C4: Okay :) **…<C+>**

Excerpt 12: Example of *Stating an Inability to Respond* in Face-to-Face Dyad 6

F12: Oh, that is speedometer ah? Oh…Ok… **…<I>**

F11: **No no no, I am not sure …<R>**

F12: You see which one is circle **…<RR->**

Excerpt 13 below is an example of *restating trigger with lexical adjustment*. The high occurrence of *restating trigger with lexical adjustment* in the response prime in the face-to-face group was due to the spelling of *trigger*. The spelling of *trigger* in the face-to-face dyad is shown in *Excerpt 14*. Spelling a *trigger* was a common act performed by the participants in the face-to-face environment, but not for the synchronous computer-mediated environment. In the synchronous computer-mediated environment, when the participant informed an auto part to his partner, the partner can read the spelling of the auto part which was displayed in the Facebook Chat interface. However, for the face-to-

face dyads, they can only depend on hearing the pronunciation of the auto parts, which always caused confusions. In this environment, the face-to-face dyads needed to spell out the *triggers* in order to avoid any misunderstanding which sometimes affected the negotiation of meaning process .

Excerpt 13: Example of *Restating Trigger with Lexical Adjustment* in Face-to-Face Dyad 1

F1: This is in front of the car **…<T>**

F2: In front? of the driver seat? **…<I>**

F1: **No! The car …<R>**

F2: In front of the car, outside or inside? **…<RR->**

Excerpt 14: Example of Spelling of Trigger in Face-to-Face Dyad 8

F16: First one is fuel meter **…<T>**

F15: Fuel meter? **… <I>**

F16: **Ok, f-u-e-l, space, m-e-t-e-r …<R>**

F15: Ok, fuel meter, is ah…ah…got E and F one, right? **…<RR+>**

For the *rephrasing or elaborating response*, the percentage of occurrences in the synchronous computer-mediated group (66.35%) was higher compared to the face-to-face group (40.17%). The occurrence of *rephrasing or elaboration* in the synchronous computer-mediated and the face-to-face groups was the highest among the other *responses* prime subcategories. In this study, *rephrasing and elaborating responses* play a major role on the preceding discourse, which allow the participants to specify the

properties of the auto parts or providing relevant contexts. As shown in *Excerpt 15*, Participant C10 elaborated the auto part "dashboard" to Participant C9. Participant C10 informed the location of dashboard in a car, "A dashboard in the interior part of the car that is infront *(in front)* of the car". Participant C10 did stop the elaboration and continued with "Where is it located behind the steering wheel". Participant C10 also linked the trigger with its surrounding subjects in a car, "Below a dashboard there can be many compartments", and listed examples of compartments, "Eg. Radio, meters, leg room etc".

Excerpt 15: Example of *Rephrasing or Elaboration* in Synchronous Computer-Mediated Dyad 5

C10: 1. Fuel Meter
2. Road Wheel
3. Exhaust Pipe
4. Rearview Mirror
5. Dashboard
6. Trunk **…<T>**

C9: Can you describe the dashboard to me? **…<I>**

C10: **Sure**
A dashboard in the interior part of the car that is infront of the car
Where is it located behind the steering wheel
Below a dashboard there can be many compartments
Eg. Radio, meters, leg room etc …<R>

With reference to the results in *Section 4.5.1.3*, the synchronous computer-mediated negotiation of meaning encourages the learners to produce more *rephrasing and elaboration responses* and less r*estating trigger with lexical adjustment* compared to the face-to-face environment. It can be concluded that the synchronous computer-mediated negotiation of meaning stimulates the learners to rephrase and elaborate more effectively than face-to-face. The synchronous computer-mediated negotiation of meaning is straight to the point where adjustment of *trigger* seldom happens. The characteristics in the synchronous computer-mediated environment can serve as a mean of motivation to the learners in vocabulary learning. The next section discusses on the *reactions to the responses* prime subcategories.

4.5.1.4 Reaction to the Response Prime Subcategories

Table 4.14 below presents the occurrences of *reaction to the response* prime subcategories. The identified prime categories were *minimal reactions to response*, *task appropriate response*, and *testing deductions*.

Table 4.14: Occurrences of Reaction to the Response Prime Subcategories

Negotiation of Meaning Primes	Primes Subcategories	Occurrences in Synchronous Computer-Mediated Group	%	Occurrences in Face-to-Face Group	%
Reactions to the response	Minimal	57	67.06	154	66.09
	Task Appropriate Response	4	4.70	9	3.87
	Testing Deductions	24	28.24	70	30.04
	Total	85	100	233	100

The percentages of all *reaction to response* primes subcategories in the synchronous computer-mediated and the face-to-face groups were quite similar. The percentages of *minimal reactions to response* of the synchronous computer-mediated and the face-to-face groups were the highest among the other *reactions to response* prime subcategories which were 67.06% and 66.09%. *Excerpt 16* below is an example of *minimal reactions to response*. As Smith's (2003) suggested, the high occurrences of *minimal reactions to the response* such as "Ok" and "I got it" reflected participants' willingness to go back to the main line of discourse. *Minimal reactions to response* mark the understanding of the target vocabulary of the participants. It allows the participants to proceed with the conversation in order to negotiate the next target vocabulary.

Except 16: Example of *Minimal Reactions to Response* in Synchronous Computer-Mediated Dyad 1

C2: sorry. can u please explain what is odometer?
I am not sure what is that **…<I>**

C1: Oh, sure.
Odometer shows the distance that we have traveled. **…<R>**

C2: **okok. i get it …<RR+>**

According to the reactions to response, *Testing deductions* (TD) was the second highest in the occurrences percentage, which were 28.24% in the synchronous computer-mediated group and 30.04% in the face-to-face group. The percentage of *task appropriate response* in the synchronous computer-mediated group was 4.7% and the face-to-face group was 3.87%. *Testing deductions* and *task appropriate responses*

served as a kind of reactions that signalled a heightened degree of participants' involvement with the interactive tasks (Smith, 2003). *Testing deductions* are utterances that participants utilised to verify their hypotheses about the auto parts.

Smith (2003) distinguished between *positive reaction to the response* (RR+) and *negative reaction to the response* (RR-). A *positive testing deduction* is what follows a *positive reaction to the response*, while a *negative testing deduction* is what follows a *negative reaction to the response*. The use of *testing deductions* suggests learners' initiative in carrying out further negotiation. *Excerpt 17* below demonstrates the point. The excerpt shows the negotiated exchanges in which Participant C3 expressed his idea about the auto part "glove compartment" that his partner, Participant C4 was trying to describe. After Participant C3 tested his hypothesis by producing *positive reaction to response*, "it's like a drawer beside the driver's seat", Participant C4 responded with *positive confirmation* "Yup you are right", to confirm the accuracy of the hypothesis.

Excerpt 17: Example of *Positive Testing Deductions* in Synchronous Computer-Mediated Dyad 2

C3: what is the glove compartment? **…<I>**

C4: Glove compartment is a small place that we can put our things inside.

It is in the car **…<R>**

My tail light and head light were broken too.

C3: **it's like a drawer beside the driver's seat? …<RR+> <TD+>**

C4: That's all. Any part that u didnt*(didn't)* know?

Yup you are right. **…<C+>**

Excerpt 18 below is an example of *negative testing deduction*. A *testing deduction* is negative when the tested out hypothesis is indicated wrong by the interlocutors. Referring to Excerpt 18 below, the conjecture of Participant C3 on the auto part "car spoiler" being discussed in "is it at the front part of the car?", was the negative reaction to response that was indicated to Participant C4 who had an incomplete understanding of the target vocabulary. This often elicited feedback in the form of *explicit disconfirmation* (C-). The *disconfirmation* was often accompanied by a *second response* (R^2) involving additional information from the speaker of the lexical confusion as shown in *Excerpt 18*, "it's behind part of the car".

Excerpt 18: Example of *Negative Testing Deduction* in Synchronous Computer-Mediated Dyad 2

C4: My car spoiler has broken. **…<T>**

C3: what is a car spoiler? **…<I>**

C4: Which is the thing that we put on the car bonnet
For decorate purpose **…<R>**

C3: **is it at the front part of the car? …<RR-> <TD->**

C4: And I need to repair the glove compartment
No, it's behind part of the car **…<C-> <R^2>**

Excerpt 19 below is an example of *task appropriate response*. *Excerpt 19* presented *task appropriate responses* in this study exhibited learners' deeper understanding of the

target auto parts by connecting and extending the prior stretch of discourse within the negotiation contexts. Participant F9 connected the auto part "trunk" to "Trunks" who is a protagonist in the Japanese animation "Dragon Ball" which he watched online.

Excerpt 19: Example of *Task Appropriate Response* in Face-to-Face Dyad 5

F10: The last one is trunk, trunk! **…<T>**

F9: Trunk is the dragon ball one mah!

F10: I am ordering auto parts, not playing dragon ball

F9: Ok, trunk is t-r-u-n-k **…<I>**

F10: Ah ya! T-r-u-n-k! **…<R>**

F9: **Oh, but that is true with the dragon ball one, at internet … <RR+>**

F10: Ok… **…<C+>**

With reference to the results in *Section 4.5.1.4*, there is no glaring differences between the synchronous computer-mediated and the face-to-face negotiation of meaning. The percentages of *minimal reactions to response*, *task appropriate response*, and *testing deductions* between both groups are similar to each other. This means that the synchronous computer-mediated and the face-to-face environments support the learners in the productions of all the *reaction to the response* prime subcategories. The next section discusses the *confirmation* and *reconfirmation* prime subcategories.

4.5.1.5 Confirmation and Reconfirmation Subcategories

Table 4.15 below presents the occurrences of *confirmation and reconfirmation* prime subcategories. The identified prime categories were *simple confirmation*, *comprehension check*, *reaffirmation* and *reconfirmation*.

Table 4.15: Occurrences of Confirmation and Reconfirmation Prime Subcategories

Negotiation of Meaning Primes	Primes Subcategories	Occurrences in Synchronous Computer-Mediated Group	%	Occurrences in Face-to-Face Group	%
Confirmation	Simple Confirmation	16	40	79	58
	Comprehension Check	10	25	19	14
	Reaffirmation	14	35	38	28
	Total	40	100	136	100
Reconfirmation	Reconfirmation	33	100	96	100
	Total	33	100	96	100

The percentages of *simple confirmation* in the face-to-face group (58%) was higher than the synchronous computer-mediated group (40%). *Excerpt 20* is an example of *simple confirmation* in Face-to-Face Dyad 5. According to Smith (2003), *simple confirmation* consists of a 'minimal' response to confirm or disconfirm the degree of understanding of the interlocutors based on the latest *reaction to the response*. It can also take the form of praise as in *Excerpt 20*.

Excerpt 20: Example of *Simple Confirmation* in Face-to-Face Dyad 5

F10: The next one, the fifth auto part I want to order is dashboard

It include everyting *(everything)*. Include speedometer, odometer, duel meter, everything. The dashboard **…<T>**

F9: The word is connected? **…<I>**

F10: Ya …<R>

F9: Ok, D-a-s-h-b-o-a-r-d **…<RR+>**

F10: **Ya, you are totally correct! …<C+>**

The percentages of *comprehension check* of the synchronous computer-mediated group (25%) was higher than the face-to-face group (14%). *Excerpt 21* below shows example of *comprehension check* in Synchronous Computer-Mediated Dyad 7. Usually, the *comprehension check* utterances is simple in nature (Smith, 2003), for example, 'got it?', 'done?', and 'anything else?'. It serves as a strategy to double check the interlocutors' understanding on the negotiated vocabulary.

Excerpt 21: Example of *Comprehension Check* in Synchronous Computer-Mediated Dyad 7

C13: Erm.. the thing where you open it and you see many engines inside

xD **…<R>**

C14: okay **…<RR>**

total RM5k har

rmb*(remember)* pay me XD

C13: Oh.. okay okay

Done?

The other parts you understand? **…<C+>**

C14: **yup …<RC+>**

The percentage of *reaffirmation* in the synchronous computer-mediated group was 35% and the face-to-face group was 28%. In *reaffirmation*, interlocutors provide a little more information to their partners. The example of *reaffirmation* presents in *Excerpt 22*. Participant C1's hypothesis was confirmed correct by Participant C2, but Participant C2 still provided some extra information to Participant C2 about the auto part "glove compartment". As argued by Smith (2003), this situation often happens due to the interlocutors having doubt whether their partners have fully understood the negotiated item. So, it serves similar function to *comprehension check*.

Excerpt 22: Example of *Reaffirmation* in Synchronous Computer-Mediated Dyad 1

C1: Okay. What's the glove compartment? **…<I>**

C2: a small compartment that you will usually find it at front seat **…**

<R>

C1: Oh we used to put things inside right? **…<RR+>**

C2: **yaya**

usually locate below the air condition …<C+>

C1: Okay .so that's all? **…<RC>**

Reconfirmation phase is also an optional phase like *confirmation* phase. Smith (2003) explained r*econfirmation* functions as "the definitive signal that the negotiation detour is now over and that the conversation may resume" (p. 52). Smith (2003) also argued that it is a common discourse feature which found in task-based computer-mediated communication. It is due to the demand for explicit realisations of the understanding or non-understanding in the interactions. There were 96 *reconfirmations* in the face-to-face group which was higher than 33 *reconfirmations* in the synchronous computer-mediated group. The results of this study show that reconfirmations happen in both synchronous computer-mediated and face-to-face interactions, and serve as the same function in the negotiation of meaning. *Excerpt 23* below is an example of *reconfirmations* in Face-to-Face Dyad 7.

Excerpt 23: Example of *Reconfirmation* in Face-to-Face Dyad 7

F13: And also the first word…steering wheel **…<T>**

F14: Steering wheel…you mean the thing I use to drive? **…<I>**

F13: Ya… **…<R>**

F14: Ok. that's it? **…<RR>**

F13: Ya, that's it! **…<C+>**

F14: **Ok, thank you! …<RC>**

Referring to the results discusses in this section, "C*onfirmation* and *Reconfirmation* Prime Subcategories", it validated Smith (2003)'s study, whereby learners carry out negotiation of meaning well past the reaction to the response phase. However, this does not happen only in the synchronous computer-mediated interaction, but also in the face-

to-face interaction. The synchronous computer-mediated negotiation of meaning encourages the learners to produce more *comprehension checks* and *reaffirmations*. Meanwhile, the face-to-face environment encourages the learners to produce more *simple confirmations* and *reconfirmations*. It can be concluded that the synchronous computer-mediated and face-to-face negotiation of meaning stimulate the learners to use the confirmation and reconfirmation discourse features in different manners. Teachers should pay attention to these differences when they want to design interactive tasks for language learners.

Besides that, the teachers should also understand the role of emoticons in the synchronous computer-mediated interaction. This is because in this study, emoticons were widely used by the participants in the synchronous computer-mediated environment for different purposes and meanings. Teachers should be aware of the use of emoticons in their language teaching. The use of emoticons in the synchronous computer-mediated interaction is discussed in the next section.

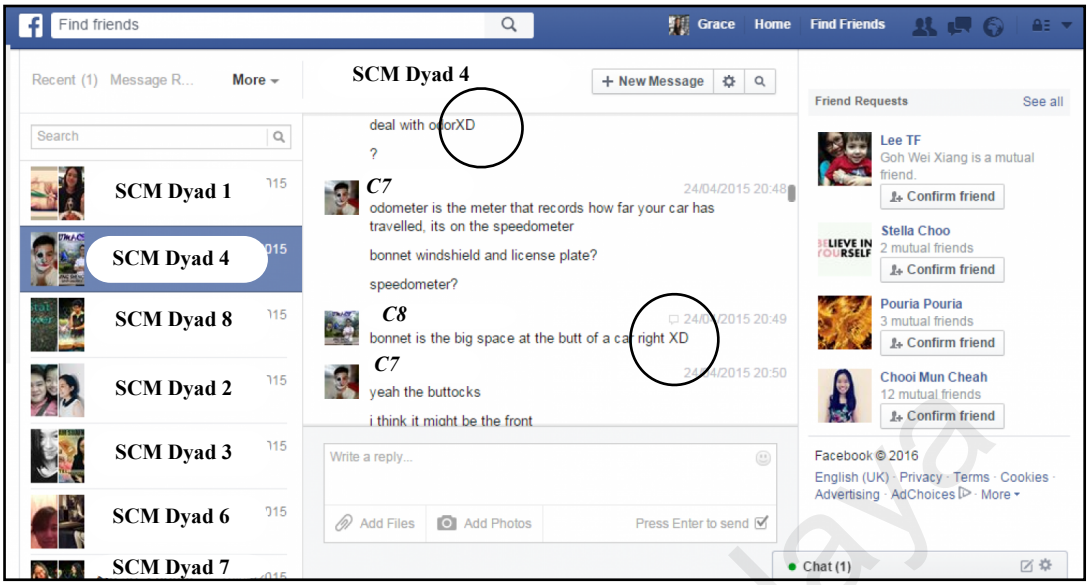
4.5.2 Use of Emoticons in Synchronous Computer-Mediated Interaction

Paralinguistic features are the speech signals that contain other information besides linguistic information, i.e. arbitrary language code, and the feature serves as a function of the speaker, the listeners, and the communicative situation (Tanimu Ahmed Jibril & Mardziah Hayati Abdullah, 2013). The main feature of non-verbal cues is its "ability to convey emotions and attitude" as well as "emphasise, contradict, substitute or regulate verbal communication" (Wei, 2012, p.2-3). Unlike the face-to-face interaction, computer-mediated communication is written-based and it lacks most of the non-verbal

elements (Wei, 2012). Thus, the use of non-verbal cues is aimed to fill the gap of conveying attitude and emotions. The synchronous computer-mediated dyads needed to pay much attention to express their emotions compared to the face-to-face dyads. This is because the face-to-face dyads can express their moods subconsciously through their facial expressions and body gestures during the communication. So, the synchronous computer-mediated dyads had to express their feelings consciously in order to signed their partners.

In this study, it was found that emoticons were incorporated to enable a listener to understand the feeling or mood of a speaker in a synchronous computer-mediated environment. Emoticons are used more in synchronous communications (Derks, Fischer & Bos, 2008). Danesi (2009) defined emoticons in synchronous computer-mediated communication as "string of keyboard characters that, when viewed sideways (or in some other orientation), can be seen to suggest a face expressing a particular emotion" (p. 110). Emoticons are considered to be socio-emotional suppliers in the synchronous computer-mediated communication (Riva, 2002). Emoticons in synchronous computer-mediated environment act as the speaker's mood indicator and provide participants with some of the richness of real-time interactions. There were different types of emoticons found in the synchronous computer-mediated Facebook Chat interfaces. *Figure 4.2* below shows the screenshot of the Facebook Chat interface with emoticon "XD".

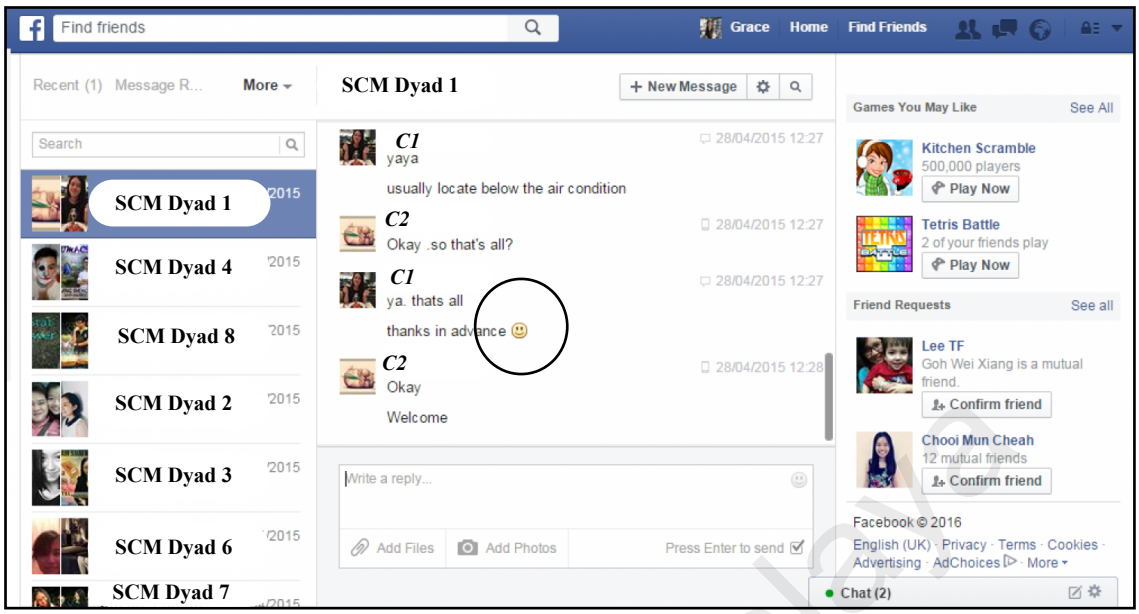
Figure 4.2: Example of Emoticon



Note: Actual names of the participants have been made anonymous to adhere to research ethics.

The emoticon "XD" was intended to express the facial expression of laughing. It is considered as a way to express mood, particularly, in short messaging service (sms) context. This type of emoticon can be formed by typed symbols and alphabets in the computer keyboard. The other examples of traditional emoticon are shocking face "O.o", smiley face "^_^", and tongue out ":-P". *Figure 4.3* below shows the screenshot of Facebook Chat emoticon. The technique of forming the emoticon was similar to the traditional emoticon which was through typing of symbols and alphabets, yet it was presented in icon format and with colours in the Facebook Chat interface.

Figure 4.3: Facebook Chat Emoticon



Note: Actual names of the participants have been made anonymous to adhere to research ethics.

Figure 4.4: Facebook Built-in Emoticons

Note: Actual names of the participants have been made anonymous to adhere to research ethics.

There is other type of emoticon in Facebook Chat interface which is shown in *Figure 4.4* as shown above. The use of this type of emoticons does not require the chat users to type a symbol or alphabet in the word typing area. Variety of emoticons, included animated emoticons can be selected from the emoticon button on the right-hand side of the typing area.

The occurrence of emoticons in the synchronous computer-mediated interactions was not high which was only 17 (3.88% of the synchronous computer-mediated total turns). But, it served as an important component in the conversations. In Skovholt, Gronning and Kankaanranta's (2014) study, the researchers proved that emoticons serve many functions in indicating the speaker's emotional stage. The study proposed that emoticons serve 3 communicative functions, which are *markers of a positive attitude*, *joke or irony markers*, and *strengtheners or softeners of speech acts*. *Excerpt 24* below shows the example of *positive attitude marker*. Skovholt et al. (2014) explained that the emoticon was used as signalling aspects of the Participant C2's positive attitude towards the Participant C1. The emoticon seemed to function as marker of the Participant C2's facial expression.

Excerpt 24: Example of *Positive Attitude Marker* in Synchronous Computer-Mediated Dyad 1

C1: yup,i will send my car to ur house by tonight. **…<RC>**

C2: odometer, windshield, speedometer, license plate, bonnet and cow-cather*(cow-catcher)*? **…<C+>**

C1: your*

C2: *catcher

okay, sure

see you tonight :)

C1: Yup.

Okay! **…<RC>**

Excerpt 25 below shows the example of *joke or irony marker*. Participant C7 and C8 were joking about the auto part "glove compartment". Participant C8 joked that he did not put gloves, but guns inside the glove compartment. He also mentioned that his mother put guns in the glove compartment. However, he put an emoticon face with tears of joy after the "My mum does" to indicate that what he said before was a joke. This gave a sign to Participant C7 that it was a joke and he was not supposed to take the conversation seriously. According to Crystal (2001), emoticons help to accentuate or emphasize a tone or meaning during message creation and interpretation. In that situation, if Participant C8 did not use the emoticon, Participant C7 may misinterpreted the meaning of the utterances, which may lead to misunderstanding between the dyad.

Excerpt 25: Example of *Joke or Irony Marker* in Synchronous Computer-Mediated Dyad 4

C7: Glove compartment is the compartment for storage bside *(beside)* the driver seat rite? **…<I>**

C8: Ahh yup~

But I don't keep gloves there

Guns maybe **…<R>**

C7: Said no one ever **…<RR+>**

C8: My mum does

(emoticon face with tears of joy)

done noting down everything? **…<C+>**

According to Skovholt et al. (2014), when an emoticon is following expressive speech acts, it is a hedge and functions as strengthener. In *Excerpt 26*, the emoticon :) follows the expressive speech act "thank you", it served as the strengthener in the speech act. *Excerpt 27* shows the example of the function of emoticon as a softener in speech act. Emoticon which functions as a softener is used with requests, corrections, rejections, and complaints (Skovholt et al., 2014). As shown in *Excerpt 27*, Participant C14 requested on the explanation of the auto part "windshield" and wanted to lower down the threatening to the Participant C13. It contributed to softening the request.

Excerpt 26: Example of *Strengthener of Speech Act* in Synchronous Computer-Mediated Dyad 7

C13: what is the difference between tail light and head light? **…<I>**

C14: tail light is the reverse light

white colour that one

head light is "big light"

in front of ar **…<R>**

*car

C13: oh ok

all done

thank you

:) …<RR+>

Excerpt 27: Example of *Softener of Speech Act* in Synchronous Computer-Mediated Dyad 7

C13: Haha

Anything else? **…<C+>**

C14: **windshield …<I>**

just want to confirm XD

C13: It is the big piece of transparent thing(don't know what to call it ==) that protects you

when you drive hahhaha **…<R>**

C14: ok **…<RR+>**

However, in this study, it was found that the function of emoticon is not restricted to only for expressing mood, making a joke, and strengthening or softening a speech act, but also to indicate the understanding of a message. As shown in *Excerpt 28* above, Participant C16 used emoticon thumb up to react to the response "ya, got circle up one" to show that he understood the meaning of speedometer. This phenomenon was due to the special emoticons offered by Facebook Chat.

Excerpt 28: Example of Indicator of Understanding in Synchronous Computer-Mediated Dyad 8

C16: Wait

Odometer

Is it only show the speed one? **…<I>**

C15: odometer is the meter show how many miles u have traveled

6 digits number that one **…<R>**

C16: Ask wrong question

Speedometer …**<I ii>**

LOL

C15: ya, got circle up one **…<R^2>**

C16:  **…<RR+>**

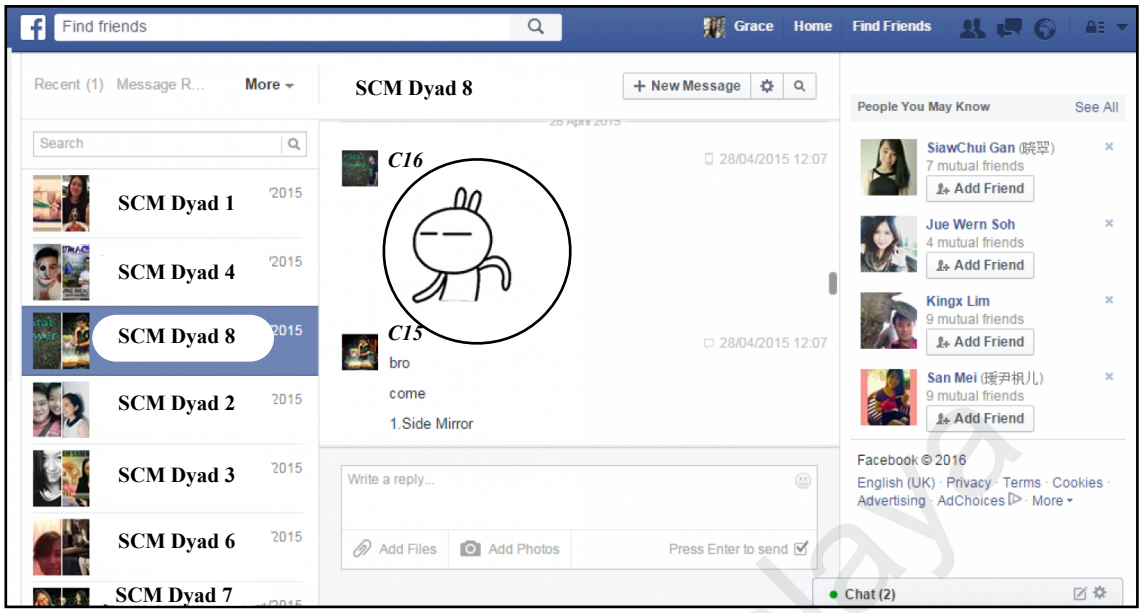
C15: if odometer will circle up the 6 digits units

speedometer will circle up whole meter **…<C+>**

C16: Ok **…<RC>**

In the Facebook Chat interactive environment, there are plenty of emoticons and those were not restricted to facial expression emoticons. This encourages the participants to express their feelings, for example relaxation, boringness, and others. *Figure 4.5* above is the example of using animated emoticon to show the state of relaxation and boredom of the participant while waiting for the interactive activity to start.

Figure 4.5: Relaxation and Boredom Emoticon



**Note: Actual names of the participants have been made anonymous to adhere to research ethics.*

In this study, the use of emoticons in the synchronous computer-mediated negotiation of meaning encourages the learners to deliver the messages without any misunderstanding and express their ideas in a clear manner. This argument is supported by the interview outcomes as shown in the *Interview Outcome 2* below for the interview question "Why do you think emoticon is an important element in the computer-mediated interaction?".

Interview Outcome 2: Emoticons Assist the Messages Delivery and Ideas Expression

C9: sometimes it *(message)* gets complicated when you try to express, but emoticon makes it easier to do so

C15: Make our message clearer and prevent misunderstood

C13: Emoticon sort of helps in expressing your own ideas

Emoticons also help the learners to express their feelings and decrease the formality during the negotiation of meaning as shown in *Interview Outcome 3* below. This creates a conducive environment for the learners to negotiate in the synchronous computer-mediated environment.

Interview Outcome 3: Emoticons Provide the Richness of Real-Time Interaction

C9: …it's sufficient to express one's feeling just by sending an emoticon

C15: I think it can help us to add on feelings on conversation

C10: …lighten up the mood in conversations…demonstrate a facial expression

C13: Without emoticon it would be very formal…

Based on what had been discussed in *Section 4.5.1*, it can be concluded that emoticons play important roles in the synchronous computer-mediated interaction. In this study, emoticons in the synchronous computer-mediated negotiation of meaning act as positive attitude *markers*, *joke or irony markers, strengtheners or softeners of speech acts,* and *indicators of understanding*. Based on the participants' interviews, emoticons assist the message delivery process and idea expression, and also provide the richness of real-time interaction in the synchronous computer-mediated environment. The next section is the summary of the chapter which presents a brief summary of all the research questions' results.

4.6 Summary of the Chapter

This chapter examined 3 research questions. For the first research question, i.e. *Is there a significant difference between synchronous computer-mediated group and face-to-face group in ESL learners' retention level in the acquisition of English vocabulary?* The results obtained in this study are concluded as follows:

For the within-subjects effect, statistics showed that there was a significant change (p-value= 0.06) with high effect size (partial eta squared= 0.938) in vocabulary test scores across the three different time period (pre-test, immediate post-test, delayed post-test). This indicated that the synchronous computer-mediated and the face-to-face negotiation of meaning facilitate L2 vocabulary acquisition. Meanwhile, for the between-subjects effect, statistics showed that there was no significant difference between the synchronous computer-mediated and the face-to-face negotiation of meaning. It indicated that the synchronous computer-mediated and the face-to-face negotiation of meaning have the same effectiveness in the learners' L2 vocabulary retention level. However, as shown in the profile plots of comparison between means vocabulary score of both groups, the face-to-face group's vocabulary scores showed a downward trend in the delayed post-test. Further investigation is needed to find out the reason of the downward trend.

For the second research question: i.e. *Is there a significant difference between synchronous computer-mediated interaction and face-to-face interaction in the ratio of negotiation of meaning in term of turns?* The results obtained in this study are concluded as follows:

From the synchronous computer-mediated and the face-to-face transcriptions, the ratio of negotiation of meaning for total turns for the both groups were quite similar. However, the results in this study indicated that the amount of negotiation of meaning in the synchronous computer-mediated group (0.804) is slightly higher than the face-to-face group (0.787). This indicated that the synchronous computer-mediated environment encourages the learners to produce more negotiation of meaning than the face-to-face environment. The learners feel more relax and comfortable to communicate online compared to face-to-face due to the conducive medium in the synchronous computer-mediated environment.

For the third research question: i.e. *What are the differences in discourse features in term of triggers, indicators, responses, and reactions to response employed by the ESL learners during synchronous computer-mediated and face-to-face negotiation of meaning in information gap activity?* The results obtained in this study are concluded as follows:

There are many differences in discourse features found in the synchronous computer-mediated and the face-to-face transcriptions. The synchronous computer-mediated negotiation of meaning encourages the learners to produce more *content triggers*, *inferential strategies indicators*, *rephrasing and elaboration responses*, *comprehension checks* and *reaffirmations* compared to the face-to-face negotiation of meaning. Thus, the learners communicate more efficiently and clearly in the synchronous computer-mediated environment. The special discourse feature, emoticons which were only found in the synchronous computer-mediated negotiation of meaning, act as *positive attitude markers*, *joke or irony markers, strengtheners or softeners of speech acts,* and

indicators of understanding in the negotiation of meaning. Emoticons assist the message delivery process and idea expression, and also provide the richness of real-time interaction in the synchronous computer-mediated environment.

In this chapter, the researcher has answered the research questions which were mentioned in Chapter 1. The findings also show that teachers should pay attention to the differences between both environments when they design interactive tasks for language learners. The implications of these findings, recommendations for future study and the conclusions of this study is outlined in the next chapter.

CHAPTER 5

CONCLUSIONS

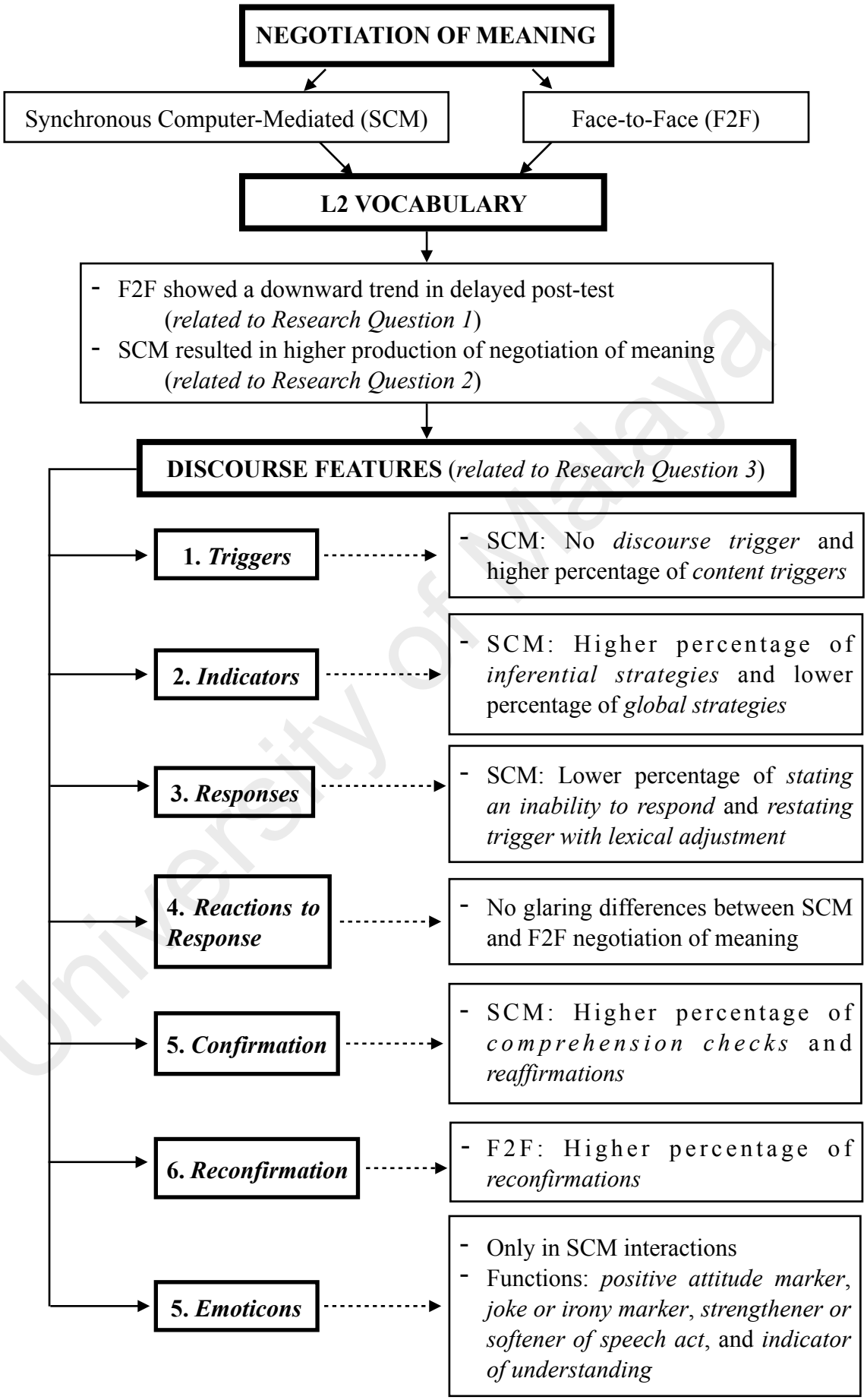
5.0 Introduction

This study investigated the effectiveness of the synchronous computer-mediated and the face-to-face negotiation of meaning on English vocabulary acquisition and explored the nature of negotiation of meaning environments during the interactive activity. The findings revealed some positive aspects of the synchronous computer-mediated interaction on learners' L2 vocabulary acquisition in comparison to the face-to-face interaction. The results showed that the learners' vocabulary retention level had improved after they were involved in negotiated interaction, and various discourse features were observed in the synchronous computer-mediated and the face-to-face interactions. The summary of the findings, implications of the study, recommendations for future research and conclusions of the study will be presented in this chapter.

5.1 Summary of the Findings

Figure 5.1 below shows the summary of the findings of this study. It portrays the outcomes of the synchronous computer-mediated and the face-to-face negotiation of meaning to the L2 vocabulary retention, and also the discourse features which were found in the environments during interactive activity.

Figure 5.1: Summary of Findings



The results from the first research question revealed that the synchronous computer-mediated and the face-to-face negotiation of meaning were effective in facilitating the acquisition of second language vocabulary. However, there was no significant difference between the two groups in the vocabulary test scores. Yet, the face-to-face group showed a downward trend in the 3 weeks delayed post-test. This phenomenon can be explained by the concept of involvement load (Laufer and Hulstijn, 2001, p.15) as the synchronous computer-mediated environment offers higher involvement load to the learners which improved the learners' vocabulary retention levels.

To summarize the findings of the second research question, the ratio of negotiated turns to total turns was calculated. The results revealed that the amount of negotiation of meaning produced in the synchronous computer-mediated group was slightly higher than the face-to-face group. This indicated that the synchronous computer-mediated environment encouraged the learners to produce more negotiation of meaning than the face-to-face environment. The learners feel more relaxed and comfortable to communicate online compared to face-to-face due to the conducive medium in the synchronous computer-mediated environment.

The results from the third research question revealed that ESL learners used different discourse features in the synchronous computer-mediated and the face-to-face environments to resolve their incomprehension issues during negotiation of meaning. The synchronous computer-mediated negotiation of meaning encouraged the learners to produce more *content triggers*, *inferential strategies indicators*, *rephrasing and elaboration responses*, *comprehension checks* and *reaffirmations* which contributed to the negotiation of meaning and also the language learning. The special discourse feature

in the synchronous computer-mediated negotiation of meaning, emoticons act as the positive attitude *markers*, *joke or irony markers,* and *strengtheners or softeners of speech acts*. These provide the richness of real-time interaction in the synchronous computer-mediated environment. Most importantly, the findings revealed that emoticons also serve as an indicator of understanding of a message in the synchronous computer-mediated interaction. Thus, the use of emoticons has gone beyond the boundary of expressing the learners' attitude and feelings; emoticons assist the message delivery process and idea expression between the interlocutors. The next section discusses the implications of the study.

5.2 Implications of the Study

This section is divided into 2 parts, which are theoretical implications and pedagogical implications. The theoretical implications based on the study's findings are discussed in the next section.

5.2.1 Theoretical Implications

Though the most widely espoused model by Varonis and Gass (1985) was largely used for analyzing the face-to-face and computer-mediated negotiation routines, the present study also incorporated Smith's (2003) expanded model in order to obtain a clearer picture regarding features of negotiation routines during the interactive task. In this study, *confirmation* and *reconfirmation* phases are found not only in the synchronous computer-mediated interactions, but also in the face-to-face interactions. Thus, Smith's (2003) Expanded Negotiation Model is deemed as a robust model for charting negotiation routines in both the computer-mediated and face-to-face interactions.

In this study, *positive attitude markers*, *joke or irony markers,* and *strengtheners or softeners of speech acts* emoticons (Skovholt et al., 2014) were found in the synchronous computer-mediated interaction. Researchers like Wei (2012), Danesi (2009), and Riva (2002) defined emoticons as the socio-emotional suppliers to express attitude and feelings in the synchronous computer-mediated communication. Based on the present data, another function of emoticon was found in the synchronous computer-mediated communication, which serves as *indicators of understanding*. Emoticons act as the indicators to indicate the interlocutor's understanding on the message and also *confirmation* in negotiation of meaning. Thus, this suggests that the use of emoticons in computer-mediated environment has gone beyond the boundary of expressing attitude and feelings and functions as a message-based component in the interaction. Emoticons have the potential use as a means of indicating understanding. The next section discusses pedagogical implications of this study.

5.2.2 Pedagogical Implications

This empirical study demonstrated that negotiation of meaning facilitates the acquisition and retention of second language vocabulary. It also revealed the differences between the synchronous computer-mediated and face-to-face environments in discourse features produced by ESL learners. Referring to the findings of this study, teachers should be made aware of the differences of negotiation of meaning between the synchronous computer-mediated and the face-to-face environments. As language activity designers, they should include more computer-mediated activities in the vocabulary teaching in classroom, for example designing online vocabulary learning activities to boost the learners' performance, as well as interest in L2 learning.

Training of social interaction in computer-mediated environment becomes an important component in language learning due to the penetration of sophisticated online learning technologies into the education scenes. Distance learning is the current trend of education, which is offered by many colleges and universities from all around the world. The geographical issue is no longer a problem in the learning process when institutions adopt computer-mediated approach in institutions. In distance learning classroom, most of the student-teacher interactions are conducted in text-based computer-mediated environment. As shown in the findings, the use of emoticons in the computer-mediated environment is a common phenomenon. It acts as a supportive daily discourse in computer-mediated environment. Teachers who are equipped with appropriate know-how on emoticon use have the advantage as they can use the emoticons in the students-teacher interactions to avoid any misunderstandings and also to make learning more interesting. The recommendations for future research is discussed in the next section.

5.3 Recommendations for Future Research

Firstly, similar to the limitations of de la Fuente's (2003) research, this study only looked at the effects of negotiated interaction on learners' retention of the target vocabulary. It will be interesting to find out if the computer-mediated and the face-to-face negotiated interaction can be beneficial for the development of other aspects of learners' lexical knowledge, for example, the acquisition of morphological features and syntactical functions. As mentioned by Smith (2004), who made the point that it would be of great value to explore whether other classes of words such as verbs or adjectives

can also be acquired in ways similar to those demonstrated in this study with concrete nouns.

In this study, there was no significant differences between the synchronous computer-mediated and the face-to-face negotiation of meaning in the learners' vocabulary retention. The reason being the gap between the immediate post-test and the delay post-test was short, which was only 3 weeks apart. Although many researchers (Haynie, 1994; Haynie, 1997; de la Fuente, 2002; de la Fuente, 2003; White & Demil, 2013) administered a delayed post-test three weeks after an immediate post-test for measuring retained knowledge, perhaps this time frame should be prolonged in order to get a more reliable result, for example the delayed post-test can be fixed more than two months after the immediate post-test.

The special feature, *split negotiation of meaning* as proposed by Smith (2003) in the synchronous computer-mediated communication is found to be evident in this study. In future research, the function of split negotiation of meaning should be investigated further to find out the extend of its influence on the negotiation of meaning. More studies should be carried out to explore split negotiation of meaning in L2 learning. The conclusions of this study is outlined in the next section.

5.4 Conclusions

This study was conducted to investigate the impact of the synchronous computer-mediated and the face-to-face negotiation of meaning on English vocabulary acquisition. This study also explored the nature of negotiation of meaning environments during the interaction. The negotiation of meaning refers to the attempts to negotiate

meanings to make the language input more comprehensible in order to achieve mutual understanding between two or more L2 learners in the interaction, and it plays a crucial role in assisting learners when selecting suitable words or phrases to describe the negotiated items before presenting them in the interactions.

The findings in this study revealed that the synchronous computer-mediated and face-to-face negotiation of meaning facilitated the learners' L2 vocabulary retention levels. The learners who interacted in the synchronous computer-mediated environment seemed to produce more negotiation of meaning compared to the face-to-face environment. The synchronous computer-mediated environment seems to encourage the learners to produce more discourse features which contributed to negotiation of meaning and L2 language learning, compared to the face-to-face environment.

Based on the findings, the conducive medium in the synchronous computer-mediated environment made the learners feel comfortable to negotiate more compared to face-to-face environment, and emoticons act as the non-verbal cues (*positive attitude markers*, *joke or irony markers,* and *strengtheners or softeners of speech acts*) in interaction. The findings are contrary to same researchers' arguments (Herring, 1996; Thatcher, 2005; Kern, 2006; Kim, 2014), which argued that learners feel dissatisfied in the computer-mediated communication and the environment is not suitable for social interaction due to lack of non-verbal cues. Emoticons provide the richness of real-time interaction in the synchronous computer-mediated environment.

Most importantly, the findings revealed that emoticons also serve as an indicator of understanding of a message in the synchronous computer-mediated interaction. Thus,

the use of emoticons is not only restricted to expressing the learners' attitude and feelings, but also to assisting the message delivery process and idea expression between the interlocutors.

In conclusion, referring to the benefits of the synchronous computer-mediated negotiation, it prompts a re-thinking of the use of computer in language learning, especially in vocabulary learning. Teachers, who act as one of the main agents in language teaching and learning, have to embrace and implement the computer-assisted language instruction for the advantage of the learners. It will make the language learning process more interesting compared to solely depending on the face-to-face negotiation of meaning approach that is commonly carried out in the language classroom.

REFERENCES

Abdul Rahim Bakar, & Shamsiah Mohamed. (2005). Computer self-efficacy of pre-service vocational teachers. In P. Kommers & G. Richards (Eds.), *Proceedings of world conference on educational multimedia, hypermedia and telecommunications 2005* (pp. 2385-2388). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE). Retrieved from http:// www.editlib.org/p/20431

Abdullah Sarani, & Leila Farzaneh Sahebi (2012). The impact of task-based approach on vocabulary learning in ESP courses. *English Language Teaching, 5*(10), 118-128. doi:10.5539/elt.v5n10p118

Adkins, D. C. (1974). Test contruction: Development and intepretation of achievement tests. United States of America: Charles E. Merrill Publishing Co.

Ahmad Jelani Shaari (2011). *Pengajaran dan pembelajaran dengan teknologi komputer*. Malaysia: UUM Press.

Ahmad, K., Corbett, G., Rogers, M., & Sussex, R. (1985). *Computers, language learning and language teaching*. United Kingdom: Cambridge University Press.

Akram Kazemi, & Mehry Haddad Narafshan (2014). Technology and English language teaching (ELT). *Advances in Language and Literary Studies, 5*(6), 60-67. doi:10.7575/aiac.alls.v.5n.6p.60

Alemi, M., Sarab, M. R., & Lari, Z. (2012). Successful learning of academic word list via MALL: Mobile assisted language learning. *International Education Studies, 5*(6), 99-109.

AlYahmady Hamed Hilal, & Saleh Said Alabi (2013). Using Nvivo for data analysis in qualitative research. *International Interdisciplinary Journal of Education, 2*(2), 181-186.

Arslanyilmaz, A., & Pedersen, S. (2010). Enhancing negotiation of meaning through task familiarity using subtitled videos in an online TBLL environment. *The Turkish Online Journal of Educational Technology*, *9*(2), 64-77.

Asha Doshi (2012). Changing tides: The story of the English language in Malaysia. In Zuraidah Mohd Don (Ed.), *English in multicultural Malaysia: Pedagogy and applied research* (pp. 15-30). Kuala Lumpur: University of Malaya Press.

Asiah Kassim, & Ng, L. L. (2014). Investigating the efficacy of focused and unfocused corrective feedback on the accurate use of prepositions in written work. *English Language Teaching, 7*(2), 119-130.

Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K. W. Spence (Ed.), *The psychology of learning and motivation: Advances in research and theory* (pp. 89–195). New York: Academic Press.

Bani Hani, N. A. (2014). Benefits and barriers of computer assisted language learning and teaching in the Arab world: Jordan as a model. *Theory and Practice in Language Studies, 4*(8), 1609-1615.

Bawani Selvaraj (2010). English language teaching (ELT) curriculum reforms in Malaysia. *Voice of Academia, 5*(1), 51-60.

Bax, S. (2003). CALL- past, present ad future. *System*, 31(1), 13-28.

Beauvois, M. H. (1998). Conversations in slow motion: Computer-mediated communication in the foreign language classroom. *Canadian Modern Language Review, 54*(2), 198-217.

Berhannudin Mohd Salleh, Ahmad Esa, Asri Selamat, Hussain Othman, Abdulah Sulaiman, & Khairul Azman Suhaimy (2010). Computer-mediated communication as a tool for improving the English language among adult learners in TVET programme. *Journal of Technical Education and Training, 2*(1), 33-48.

Bruce, B. C. (1990). Computers. In J. Jensen, J. Flood, D. Lapp, & J. Squire (Eds.), *Handbook of research on teaching the English language arts* (pp. 536-541). New York: Macmillan.

Cervatiuc, A. (2008). ESL vocabulary acquisition: Target and approach. *The Internet TESL Journal, 14*(1). Retrieved from http://iteslj.org/Articles/Cervatiuc-Vocabulary Acquisition.html

Chua, Y. P. (2012a). *Mastering research methods*. Shah Alam: McGraw-Hill Education.

Chua, Y. P. (2012b). *Asas statistik penyelidikan* (2nd ed.). Shah Alam: McGraw-Hill Education.

Chua, Y. P. (2013). *Mastering research statistics*. Shah Alam: MGraw-Hill Education.

Chua, Y. P. (2014). *Research methods and statistics (Book 4): univariate and multivariate tests* (2nd ed.). Shah Alam: McGraw-Hill Education.

Chun, D. M. (1994). Using computer networking to facilitate the acquisition of interaction competence. *System, 22*(1), 17-31.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New Jersey: Lawrence Erlbaum Associates.

Corder, S. P. (1967). The significance of learner' errors. *International Review of Applied Linguistics*, 5, 161-170.

Creswell, J. W. (2014). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Edinburgh Gate: Pearson Education Limited.

Crystal, D. (2001). *Language and the Internet*. Cambridge: Cambridge University Press.

Crystal, D. (2003). English as a global language (2nd ed.). United Kingdom, UK: Cambridge University Press.

December, J. (1996). What is computer-mediated communication? Retrieved from http://www.december.com/john/study/cmc/what.html

de la Fuente, M. J. (2002). Negotiation and oral acquisition of L2 vocabulary: The roles of input and output in the receptive and productive acquisition of words. *Studies in Second Language Acquisition, 24*, 81-112.

de La Fuente, M. J. (2003). Is SLA interactionist theory relevant to CALL? A study on the effects of computer-mediated interaction in L2 vocabulary acquisition. *Computer Assisted Language Learning, 16*(1), 47-81.

Danesi, M. (2009). *Dictionary of media and communications*. New York: M. E. Sharpe, Inc.

Derks, D., Fischer, A. H., & Bos, A. E. R. (2008). The role of emotion in computer-mediated communication: A review. *Computers in Human Behavior, 24*, 766-785.

Elliot, L. J. (1978). Vocabulary teaching and TESOL: A need for reevaluation of existing assumptions. *TESOL Quarterly, 20*(2), 305-325.

Felix, U. (2003). *Language learning online: Toward best practice*. Routledge: Swets & Zeitlinger Publisher.

Fernández-García, M., & Martinez-Arbelaiz, A. (2002). Negotiation of meaning in nonnative speaker-nonnative speaker synchronous discussions. *Calico Journal, 19*(2), 279-284.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage Publication.

Gairns, R., & Redman, S. (1986). *Working with words: A guide to teaching and learning vocabulary*. Cambridge: Cambridge University Press.

Graziano, A. M., & Raulin, M. L. (2014). *Research methods: A process of inquiry*. Edinburgh Gate: Pearson Education Limited.

Greene, J. C., & Caracelli, V. J. (1997). *Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms* (New Directions for Evaluation, No. 74). San Francisco: Jossey-Bass.

Haynie, W. J. (1994). Effects of multiple choice and short-answer tests on delayed retention learning. *Journal of Technology Education, 6*(1), 32-44.

Haynie, W. J. (1997). Effects of anticipation of tests on delayed retention learning. *Journal of Technology Education, 9*(1), 20-30.

Herring, S. (1996). *Computer-mediated communication: Linguistic, social and cross-cultural perspectives*. Amsterdam: John Benjamins.

Herring, S. C. (1999). Interactional coherence in CMC. *Journal of Computer-Mediated Communication, 4*(4). Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.1999.tb00106.x/full

Herring, S. C. (2001). Computer-mediated discourse. In D. Schiffrin, D. Tannen, & H. Hamilton (Eds.), *The handbook of discourse analysis* (pp. 612-634). Oxford: Blackwell Publishers. Available from http://ella.slis.indiana.edu/~herring/cmd.pdf

Higgins, C. (1993). *Computer-assisted language learning: Current programs and projects.* Washington: ERIC Clearinghouse on Languages and Linguistics.

Higgin, J. & John, T. (1984). *Computer in language learning*. England: Hazell, Watson and Viney Ltd.

Huseyin Mahmutoglu, & Zahide Kicir (2013). The use of mother tongue in EFL classrooms. *EUL Journal of Social Science, 4*(1), 49-72. Retrieved from http://en.lau.edu.tr/euljss/si44.pdf

Hymes, D. (1972). On communicative competence. In J. B. Pride & J. Holmes (Eds.), *Sociolinguistics*. Harmondsworth: Penguin Books.

Jones, C., & Fortescue, S. (1987). *Using computers in the language classroom*. Oxford: Oxford University.

Jung, U. O. H. (2005). CALL: Past, present and future- A bibliometric approach. *ReCALL, 17*(1), 4-17.

Kenning, M. M., & Kenning, M. J. (1990). *Computer and language learning: Current theory and practice.* New York: Ellis Horwood.

Kern, R. (2006). Perspectives on technology in learning and teaching languages. *TESOL Quarterly, 40*(1), 183-210.

Kim, H. Y. (2014). Revisiting synchronous computer-mediated communication: Learner perception and the meaning of corrective feedback. *English Language Teaching, 7*(9), 64-73.

Kow, K. Y. C. (2012). Putting second language acquisition theories into practice: A case study. In Zuraidah Mohd Don (Ed.), *English in Multicultural Malaysia: Pedagogy and Applied Research* (pp. 33-48). Kuala Lumpur: University of Malaya Press.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. London: Longman.

Lankiewicz, M. (2011). Away from the input: Affordance as a way of activating personal touch to language learning. In M. Pawlak (Ed.). *New perspectives on individuals differences in language learning and teaching*. Retrieved from http:// books.google.com.pk/books?id=-U5WJzXtVC4C&pg=PA228&dq=difference +between+input+intake+second+language&hl =en&sa=X&ei=e9akT7G9 LcXnrAeJiaTUAQ&ved =0CEIQ6AEwAg#v=onepage&q=intake&f=false

Laufer, B., & Hulstijn, J. (2001). Incidental vocabulary acquisition in a second language: The construct of task induced involvement. *Applied Linguistics, 22*(1), 1-26.

Lee, J. Y. (2009). *The effect of computer-mediated communication (CMC) interaction on L2 vocabulary acquisition: A comparison study of CMC interaction and face-to-face interaction.* Retrieved from Digital Repository @ Iowa State University.

Lewis, M. (1997). *Implementing the lexical approach: Putting theory into practice*. Hove: Language Teaching Publications.

Lightbrown, P. M., & Spada, N. (2006). *How languages are learned* (3rd ed.). Oxford: Oxford University Press.

Long, M. H. (1980). *Input, interaction and second language acquisition* (Unpublished PhD dissertation). University of California, Los Angeles.

Long, M. H. (1981). Input, interaction, and second−language acquisition. *Annals of the New York Academy of Sciences, 379*(1), 259-278.

Long, M. H. (1983a). Native speaker/non-native speaker conversation and the negotiation of comprehensible input. *Applied linguistics, 4*(2), 126-141.

Long, M. H. (1983b). Linguistic and conversational adjustments to non-native speakers. *Studies in second language acquisition, 5*(02), 177-193.

Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413-468). San Diego: Academic Press.

Long, M. H., Inagaki S., & Ortega L. (1998). The role of implicit negative feedback in SLA: Models and recasts in Japanese and Spanish. *The Modern Language Journal, 82*(3), 357-371.

Marty, F. (1981). Reflections on the use of computers in second language acquisition. *System*, 9(2), 85-98.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: A sourcebook for new methods* (2nd ed.). Thousand Oaks: Sage.

Milton, J., & Meara, P. (1995). How periods abroad affect vocabulary growth in a foreign language. *ITL Review of Applied Linguistics 107-108*, 17-34.

Ministry of Education (2001). *Rancangan pendidikan 2001-2010: Perancangan bersepadu penjana kecemerlangan pendidikan*. Retrieved from http:// bibliografi.moe.edu.my/SumberPendidikan/index.php/dasar/112-rancangan-pembangunan-pendidikan.html

Ministry of Education (2010). Membangun dan mengekalkan modal insan bertaraf dunia. In *Rancangan Malaysia kesepuluh 2011-2015*. Retrieved from http:// www.moe.gov.my/userfiles/file/RMK10bab5%2014_6_10.pdf

Mitchell, R., Myles, F., & Marsden, E. J. (2013). *Second language learning theories: Third edition* (3rd ed.). Abingdon: Routledge.

Mooij, T. (2005). Design of educational and ICT conditions to integrate differences in learning: Contextual learning theory and a first transformation step in early education. *Computers in Human Behavior, 23*, 1499-1530. doi:10.1016/j.chb. 2005.07.004

Nam, S. J. (2011). The effects of task type and group structure on meaning negotiation in synchronous computer-mediated communication. Paper presented at the Selected Proceedings of the 2009 Second Language Research Forum.

Nation, I. S. P. (1978). Translation and the teaching of meaning: Some techniques. *ELT Journal, 32*(3), 171-175.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.

Ng, L. L., & Sappathy, S. M. (2011). L2 vocabulary acquisition: The impact of negotiated interaction. *GEMA Online™ Journal of Language Studies, 11*(2), 5-20.

Nunan, D. (1991). Language teaching methodology. New York: Prentice Hall.

Pallant, J. (2007). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows* (3rd ed.). New York: Open University Press.

Paramskas, D. M. (1999). The shape of computer-mediated communication. In K. Cameron (Ed.), *Computer assisted language learning (CALL): Media, design and applications* (pp. 13-34). Lisse: Swets and Zeitlinger.

Pawasarat, J. (2007, June 17). Another view: Driver's license is a vital link to employment. *Journal Sentinel*. Retrieved from http://www.jsonline.com/news/opinion/29374904.html

Philips, M. (1987). Potential paradigms and possible problems for CALL. *System, 15*(3), 275-287.

Pica, T., Kanagy, R., & Falodun, J. (1993). Choosing and using communication tasks for second language instruction and research. In G. Crookes & S. Gass (Eds.), *Tasks and language learning: Integrating theory and practice* (pp. 9-34). Clevedon: Multilingual Matters.

Pica, T. (1994). Research on negotiation: What does it reveal about second-language learning conditions, processes and outcomes? *Language learning*, *44*(3), 493-527.

Prathibha, J. (2010). Computer assisted language learning: Benefits and barriers. *Journal of Literature, Culture and Media Studies, 2*(3), 59-71.

Rahimpour, M. (2011). Computer assisted language learning (CALL). *International Journal of Instructional Technology and Distance Learning, 8*(1), 3-9.

Riazi, A. M., & Candlin, C. N. (2014). Mixed-methods research in language teaching and learning: Opportunities, issues and challenges. *Language Teaching, 47*, 135-173. doi:10.1017/S0261 444813000505

Riva, G. (2002). The sociocognitive psychology of computer-mediated communication: The present and future of technology-based interactions. *CyberPsychology & Behavior, 5*, 581-598. http://dx.doi.org/10.1089/109493102321018222

Rozmi Ismail (2013). *Methodologi penyelidikan: Teori dan praktis*. Malaysia: Penerbit Universiti Kebangsaan Malaysia.

Schmitt, N. (2000). *Vocabulary in language learning*. Cambridge: Cambridge University Press.

Shanthi Nadarajan (2013). Study of science students' expectation for university writing courses. *Issues in Language Studies, 2*(1), 38-45.

Sharma, P., & Barrett, B. (2007). *Blended learning: Using technology in and beyond the language classroom*. Oxford: Macmillan.

Sharp, V. F. (2009). *Computer education for teachers: Integrating technology into classroom teaching* (6th ed.). Hoboken: John Wiley & Sons.

Skinner, B. F. (1978). *Reflections on behaviorism and society*. Englewood Cliffs: Prentice Hall.

Skovholt, K., Grønning, A., and Kankaanranta, A. (2014), The communicative functions of emoticons in workplace e-mails: :-). *Journal of Computer-Mediated Communication, 19,* 780-797. doi: 10.1111/jcc4.12063

Smith, B. (2003). Computer–mediated negotiated interaction: An expanded model. *The Modern Language Journal, 87*(1), 38-57.

Smith, B. (2004). Computer-mediated negotiated interaction and lexical acquisition. *Studies in Second Language Acquisition, 26*(3), 365-398.

Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. In S. M. Gass & C. G. Madden (Eds.), *Input in second language acquisition* (pp. 235-253). Rowley: Newbury House.

Stephen, B. (2003). CALL-past, present and future. *System, 31*, 13-28.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). New York: Pearson Education Inc.

Tam, S. S., Kan, N. H., & Ng, L. L. (2010). Low proficiency learners in synchronous computer-assisted and face-to-face interactions. *Turkish Online Journal of Educational Technology-TOJET, 9*(3), 61-75.

Tanimu Ahmed Jibril & Mardziah Hayati Abdullah (2013). Relevance of emoticons in computer-mediated communication contexts: An overview. *Asian Social Science 9*(4), 201-207.

Tashakkori, A., & C. Teddlie (2003). Handbook of mixed methods in social and behavioural research. London: Sage.

Tatiana Dina, A., & Ileana Ciornei, S. (2013). The advantages and disadvantages of computer-assisted language learning and teaching for foreign languages. *Procedia Social and Behavioral Sciences, 76*, 248-252.

Taylor, L. (1990). *Teaching and learning vocabulary*. Hertfordshire: Prentice Hall International.

Taylor, R. (1980). *The computer in school: Tutor, tool, tutee.* New York: Teachers College Press.

Teng, X. (2010). Negotiation of meaning in synchronous computer-mediated communication (CMC): The role of online chat in second language vocabulary development. Retrieved from Digital Repository @ Iowa State University.

Teoh, L. N. (2009). *Lexis in compositions of ESL students in a selected University College in Nilai, Malaysia.* Retrieved June 9, 2014 from University Putra Malaysia Institutional Repository.

Thatcher, B. (2005). Situating L2 writing in global communication technologies. *Computers and Composition, 22*, 279-295. doi:10.1016/j.compcom.2005.05.002

Thornbury, S. (2002). *How to teach vocabulary*. Edinburgh: Pearson Education Limited.

Tidwell, L. C., & Walther, J. B. (2006). Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. *Human Communication Research, 28* (3), 317-348.

Underwood, J. (1984). *Linguistics, computers, and the language teacher: A communicative approach.* Rowley: Harvard University Press.

Van der Kleij, F. M., Feskens, R. C. W., & Eggen, T. H. J. M. (2015). Effects of feedback in a computer-based learning environment on students' learning outcomes: A meta-analysis. *Review of Educational Research*. doi:10.3102/0034654314564881. Advance online publication.

Varonis, E. M., & Gass, S. (1985). Non-native/non-native conversations: A model for negotiation of meaning. *Applied linguistics, 6*(1), 71-90.

Walther, J. B. (1992). Relational communication in computer-mediated interaction. *Human Communication Research, 19*, 50-88.

Wang, B. T., Teng, C. W., & Chen, H. T. (2015). Using ipad to facilitate English vocabulary learning. *International Journal of Information and Education Technology, 5*(2), 100-104. doi: 10.7763/IJIET.2015.V5.484

Warschauer, M. (1996). Computer-assisted language learning: An introduction. In S. Fotos (ed.), *Multmedia language teaching* (pp. 3-20). Tokyo: Logos International.

Warschauer, M. (2000). *CALL for the 21st Century.* IATEFL and ESADE Conference, 2 July 2000, Barcelona, Spain. Available from http://www.gse.uci.edu/markw/cyberspace.html

Warschauer, M., & Healey, D. (1998). Computers and language learning: An overview. *Language Learning*, 31, 57-71. Retrieved from http://hstrik.ruhosting.nl/wordpress/wp-content/uploads/2013/03/Warschauer-Healey-1998.pdf

Weche, M. B. (1984). Input and interaction in second language acquisition. In C. Gallaway & B. J. Richards, *Input and interaction in language acquisition* (pp. 219-249). London: Cambridge University Press.

Wei, A. C. Y. (2012). Emoticons and the non-verbal communication: With reference to Facebook (Unpublished master thesis). Department of Media Studies, Christ University, Bangalore– India.

White, J. P., & Demil, A. J. (2013). Transfer-of-training effects in processing instruction: The role of form-related explicit information. *Studies in Second Language Acquisition, 35*, 519-544. doi:10.1017/S0272263113000120

Wong, L. P. (2008). Data analysis in qualitative research: A brief guide to using Nvivo. *Malaysian Family Physician, 3*(1), 14-20.

Yanguas, I. (2012). Task-based oral computer-mediated communication and L2 vocabulary acquisition. *CALICO Journal, 29*(3), 507-531.

Yuksel, D., & Inan, B. (2014). The effects of communication mode on negotiation of meaning and its noticing. *ReCALL, 26*(3), 333-354.

Zhao, S. Y., & Bitchener, J. (2007). Incidental focus on form in teacher-learner and learner-learner interactions. *System, 35*, 431-447.

Zhang, S. M. (2009). The role of input, interaction and output in the development of oral fluency. *English Language Teaching, 2*(4), 91-100.

(2009, August 17). Raja Nazrin outlines four key education areas. The Star. Retrieved from http://www.thestar.com.my/story/?file=%2f2009%2f8%2f17%2fnation%2f200 90817162801&sec=nation

(2014, September 3). English literacy vital, says DPM. *New Straits Times*. Retrieved from http://www.nst.com.my/node/29554

(2014, December 18). Increase the difficulty? Can reduce car accident? New car driving curriculum advantages and disadvantages. *Sinchew Daily*. Retrieved from http://mykampung.sinchew.com.my/node/335651