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The communicative two-way pre-writing task performed via asynchronous and synchronous computer-mediated communication and its influence on the writing expertise development of adult English language learners: A mixed design study

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The Communicative Two-Way Pre-Writing Task Performed via Asynchronous and

Synchronous Computer-Mediated Communication and its Influence on the Writing

Expertise Development of Adult English Language Learners: A Mixed Design Study

by

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of the requirements for the degree of
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DEDICATIONS

To my husband Andrian, my daughter Iana, and my parents, Margarita and Ivan Sarievi, with my deepest love and appreciation for all they have done for me.

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An old African proverb says: "It takes a village to raise a child." I would allow myself to rephrase it: "It takes a community of practice to support the completion of a dissertation study." In this section, I would like to take the opportunity to express my sincere thankfulness to all the people who have contributed to the research project presented in this dissertation.

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Iona Sarieva

ABSTRACT

This study addresses a gap in the second language writing research through examining processes occurring during the pre-writing and drafting stages of adult second language learners' writing when computer-mediated communication (CMC) pre-writing activities are involved. The theoretical framework adopted in the study is Writing-as-process approach with a focus being the pre-writing and drafting stages of the writing process. The design of the study is a parallel component mixed method design with an ongoing dominant qualitative stage and a nested less-dominant quantitative stage. In the qualitative stage of the project, two case studies were conducted: a group case study of the 60 intermediate level ESL learners who participated in the study and a more focused instrumental case study of eight learners selected based on their post-treatment writing gains. The research focus was on the social environment, including the learning task, peer interaction, mode of communication, and the intertextual connections between pre-writing discussions of the participants and their first drafts. The qualitative stage findings suggested that the CMC mode of communication (synchronous vs.

asynchronous) affected differently the participants' patterns of interaction as well as the intertextual connections of their first drafts with the pre-writing discussions.

In the quantitative stage, the researcher compared the first-draft writings of students who participated in asynchronous and synchronous pre-writing discussions (treatment) through the analysis of eight textual features of students' first drafts, namely: (1) syntactic complexity, (2) the amount of information present in a single focus, (3) the quantity of overall information present, (4) lexical information per clause, (5) vocabulary complexity, (6) rhetorical soundness, (7) presentation and development of main ideas, and (8) overall language use. The first five textual features, presented with continuous scores, were analyzed using five ANCOVA tests with significance level alpha being set at .05; the concomitant variables were the corresponding pre-treatment scores for each of the measures. Textual features 6-8, presented with ordinal scores, were analyzed through two-tailed Mann-Whitney U tests. While no differences were found for any of the eight proposed features when the writings of the participants in the asynchronous CMC and the synchronous CMC groups were compared, the consideration of the qualitative findings suggested that further analysis of an additional textual aspect of students' first drafts, more specifically – distinct lexical items, could be informative.

The quantitative analysis of distinct lexical items of students' writings completed after synchronous and asynchronous pre-writing discussions was performed through the application of a two-tailed t-test. The results of this analysis led to the conclusion that at significance level alpha = .05, the CMC mode in which the pre-writing discussion was completed influenced differently students' first drafts on a lexical level: the intertextual

connections between the pre-writing interactions and the first drafts of the participants

from the asynchronous group at a lexical level were significantly stronger than those of

their counterparts who participated in synchronous pre-writing discussions.

CHAPTER I: INTRODUCTION

Statement of the Problem

Computers have been used in second language teaching for several decades now. However, the fast development of computer technologies changed their role in our everyday life in general and in the language classroom in particular. The explosive growth of the computer-mediated communication (e-mail, chat, on-line conferencing, blogging, etc.) is a phenomenon that greatly influences the way people interact with each other in the 21st century. This dissertation addresses the question of how the development of writing skills and writing expertise of second language learners could be influenced by these new trends in human communication in the context of the contemporary writing research and pedagogy in which writing is perceived as a process of text creation through interaction with peers, other texts, and communities.

The emerging globalization and the technological revolution of the 20th and the 21st century raised new requirements and expectations for educators. The processes of democratization of the Western society and education influenced the way how language teaching and, more specifically, writing in educational settings are approached: the diversity of second language learners and the necessity to meet their needs were recognized (Grabe & Kaplan, 1996). The wide implementation of computer technologies and means of communication further created substantial changes in the second language (L2) learning environments. These factors call for research on the specifics of the L2

writers' development within the social context influenced by new technologies and means of communication.

Second language writing research and practice are consistent with the trends of the general composition theory development. In the past decades, the research community reassessed academic writing, stressing the importance of perceiving it as a recursive and complex process of text creation rather than simply as a final product. This view on writing guided the creation of the basic principles of writing-as-process theoretical and pedagogical approach (Ferris & Hedgcock, 1998; Grabe & Kaplan, 1996; Reither, 1994). The new understanding of writing was so prominent that Hairston (1982) qualified it as a paradigm shift in writing theory.

The globalization and democratization processes also influenced the development of foreign and second language education theory and practice. The necessity of an approach that would enhance communication among different cultures was recognized, which directed foreign language and second language educators to aim their instruction at establishing teaching practices that would lead to strong communication skills development (Salaberry, 2001; Warschauer, 1999). In the second half of the 20th century, the Proficiency Based Language Learning model of foreign language education was described and accepted (Ellis, 1994); this model met the needs of both language learners and society. The Proficiency Based Language Learning model is consistent with the view on writing as an evolving process because both recognize the importance of teaching language with a focus on purposeful communication (Cooper, 1989; Salaberry, 2001).

Furthermore, the development of computer technologies and local and global networks are constantly reshaping society and education. This implementation of

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computer technologies into everyday life and academic environments is transforming

basic concepts such as literacy and communication (Aronowitz, 1992; Leu & Donald,

2000; Ware & Warschauer, 2006; Warschauer, 1999). This major change in the way

people communicate and the new communicational tools they use influenced language

education: the interaction is not limited anymore to the boundary of the classroom; the

text nature of the computer-mediated communication (CMC) allows learners to have an

easy access to the language generated during the communication, often within the same

communication act (Warschauer, 1999).

These major shifts in communication, writing theory, and second language

education posed a new question to researchers: How can the new views on language,

communication, and technology be applied in L2 educational settings in order to improve

language acquisition and support learners in gaining and mastering language skills

relevant to the needs of the contemporary society? (Liu, Moore, Graham, & Lee, 2002;

Sotillo, 2000; Warschauer, 2004a). The higher accessibility of computers nowadays

encourages researchers and practitioners to emphasize the application of technology in

the L2 classroom in order to enhance language teaching and learning processes (Liu et al.

2002). This emphasis identified a new area in language teaching practice and research –

Computer Assisted Language Learning (CALL).

Levy defines CALL as "the search for and study of the computer in language

teaching and learning" (Levy, 1997, p.1). Educators and researchers agree "that there

could be a potential waste of resources if pedagogy does not take advantage of new

technological tools" (p. 39, Salaberry, 2001). Further, Chapelle (2000) states that the

development of computer networks, including local and global networks, extends the

possibilities for interaction beyond the human-computer dyad, providing opportunities for human-human interaction via computers; thus, CALL becomes an important venue for language use and learning that offers new perspectives and poses new questions. Today, the question is not if CALL contributes to language learning but rather what tasks should be applied in the second language classroom in order to support language acquisition in instructional settings (Chapelle, 2000; Oxford, Rivera-Castillo, Feyten, & Nutta, 1998).

The process of adoption and implementation of new pedagogical approaches influenced by the above stated societal and educational shifts has already started – in the past two decades, language teachers and researchers have been concerned with issues related to creating a cooperative classroom environment that would allow for effective student-teacher interaction and peer collaboration (Ferris, 2003; McDonell, 1992; Ohta, 2000). The nature of collaborative learning environments and collaborative learning processes is further shaped by the increasing presence of technology in the classroom. This presence entails new channels for communication and collaboration as well as new shifts of the dynamics of communication processes, thereby influencing the way language learning and teaching, in general, and, more specifically, the writing process of language learners are approached (Liu & Sadler, 2003; Salaberry, 2001; Ware & Warschauer, 2006; Warschauer, 1999).

<div align="center">Theoretical Background</div>

The current study is guided by Writing-as-process theory (Grabe & Kaplan, 1996); particularly, the broadened theoretical framework within which the current study is designed embraces the social-context approach to the writing process. Within this framework, wringing is understood as a cultural activity, which incorporates the notions

<div align="center">4</div>

of self-expressive, cognitive, and discourse processes (Matsuda, 2003). This trend in writing theory and research is influenced by the Vygotskian perspective on language, thought, and higher mental processes as sociocultural processes (Faigley, 1994; Grabe & Kaplan, 1996; Matsuda, Canagarajah, Harklau, Hyland, & Warschauer, 2003; Warschauer, 1999).

The researcher views the Writing-as-process theory from the standpoint that human language in general and writing in particular are not simply a product of an individual consciousness; rather, they are imbedded into societal processes and contexts and can be understood only if the specific community of writers is taken into account (Faigley, 1994; Grabe & Kaplan, 1996; Reither, 1994). Thus, writing is viewed not simply as a creation of a final product but rather as a process of text creation in which the writing ability and expertise develop. This understanding of writing is further informed by Post-process theory that assesses critically the expressivist and cognitivist approaches to writing. Researchers who adopt the Post-process approach to writing point out that while "the fundamental observations that an individual produces text by means of a writing process has not been discarded" (Petraglia, 1999, p. 53), writing should not be viewed as a process with rigid predetermined stages but rather as a socially embedded phenomenon that includes writers, genres, audiences, cultural practices, and social interactions (Kent, 1999; Petraglia, 1999; Reither, 1994). Thus, the main focal points of writing as a continuous social phenomenon rather than a creation of a product have been emphasized.

In the process of data collection and interpretation in the current study, writing was approached as defined by Kent (1999). According to him, writing is: (a) a public act;

in other words, in the writing act other language users apart from the writer are automatically included; (b) an interpretive act through which the writer enters "into a relation of understanding with other language users" (Kent, 1999, p. 2); and (c) a situated act within which writers compose from a certain position. When defining these core assumptions in the context of social understanding of writing, the writing act, the writer, and the writing product are not separated. They are rather viewed as integration, as "both will and action, internal agency and external product" (Couture, 1999, p. 31).

In the view of the researcher, this theoretical framework supports the understanding of the complexity of the L2 writing process employing the reference to social structures and processes that take place prior to and during text construction. In addition, approaching the writing act, the writer, and the writing product as integrated parts of one process allows for attending to the specifics of L2 writers' text construction on both macro- and micro-levels (Ferris & Hedgcock, 1998; Grabe & Kaplan, 1996). Therefore, this theoretical framework, as applied in the context of a study that aims to inquire the L2 writers' development, is viewed to empower the recognition and interpretation of the specifics of the L2 learning processes and writing skills development.

This theoretical framework influenced the design of the study, focus specification, type of language learning tasks employed, and learning environments under investigation. The understanding of writing as a complex phenomenon encouraged the researcher to consider both qualitative and quantitative aspects of data analysis. The view on writing as a public and interpretative act guided the focus to the pre-writing stage design of the communicative pre-writing task. Further, accepting writing to be a situated act guided the

focus on the social context and interaction within which the specific writing processes evolve including macro- and micro- textual levels.

Rationale of the Study

The goal of the researcher in the current study was to answer questions related to the current processes in language education; the researcher investigated how the process of L2 writing could be supported by synchronous and asynchronous CMC used in the pre-writing stages. The social-context approach to writing guided the current research project towards examining the process of L2 literacy skills development in a social context that incorporates the interactions among various actors as well as consideration of their backgrounds and goals. More precisely, the presented research study investigated how a specific communication task performed in asynchronous and synchronous CMC environments influenced the writing skills development of adult language learners. Through accounting for participants' backgrounds, opinions about writing and CMC, their past and current writing experiences the researcher aimed to build a canvas within which the data analysis evolved and conclusions were made.

The study is needed because a broader conceptualization of writing processes viewed as they occur in socially and historically dynamic contexts would contribute to writing theory and pedagogy (Faigley, 1994; Matsuda, 2003); in addition, the learning processes supported by CALL and CMC and their influence over the language classroom dynamics need to be further studied, described, and presented (Sotillo, 2000; Warschauer, 2004b). More research is needed about how language learning and L2 writing development are supported by tasks performed in asynchronous and synchronous computer-mediated communication modes, how learners perceive and apply

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communicative tasks in the process of CMC interaction, and how this affects their

language performance (Blake, 2000; Warschauer, 2004b). Such research would provide a

basis for better understanding of the changing philosophical values of teachers and

learners as well as of learning as a social activity (Chapelle, 2000; Wertsch, 1985).

Further, this would allow for expansion and fine-tuning of methodological techniques

concerning design of CALL activities, and it will shade light on the ways language

learners can be supported in the contemporary language classroom while accounting for

the social processes (Chapelle, 2000). The current study was guided by this need to better

understand the above stated issues related to CALL. It focused specifically on

communication process performed via computer and its influence on writing skills

formation.

This study approached the research questions from a pragmatist paradigm

applying a mixed method design that was perceived to be applicable and desirable in

applied research (Teddlie & Tashakkori, 2003). The pragmatist paradigm approach

provided better understanding of CMC contribution to ESL student writing. The

researcher viewed this approach to sustain the process of identification and interpretation

of factors that influence students' CMC interaction, students' perceptions of the CMC

task in relation to their writing achievements, as well as how the CMC task performance

supports their writing. The problem was approached through a study of a parallel

component mixed method design. The ongoing dominant qualitative stage was extended

with a multiple case study (Yin, 2003) while the nested less-dominant quantitative stage

involved an experimental design (Caracelli & Greene, 1993; Tashakkori & Teddlie,

2003). The researcher perceives that applying more comprehensive analytical techniques

allowed providing better and more thorough interpretations of the qualitative findings

(Creswell, Plano Clark, Gutmann, & Hanson, 2003), which could reveal additional

dimensions in the study and educational practices related to writing. Figure 1.1 presents

graphically the stages of this parallel component mixed design study.

Figure 1.1

Stages of the Study
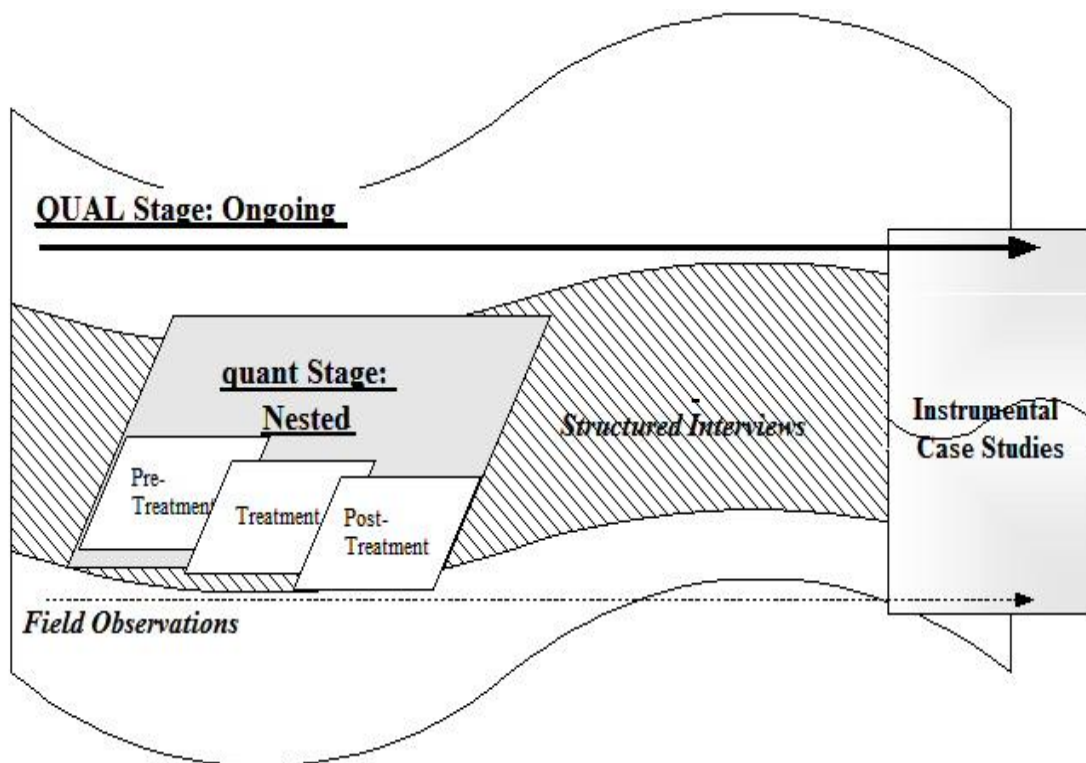
Research Questions

The study aimed to answer the following overarching research question: How can

computer-mediated communication influence the writing skills development of English

as second language adult learners? This question was addressed in both the qualitative

and quantitative stages of the study focusing on series of sub-questions.

Quantitative Stage Research Questions

In the quantitative stage of the study, the following general research question was posed: How does the CMC mode (synchronous vs. asynchronous) used for the completion of a communicative two-way pre-writing task influence the quality of intermediate level ESL students' writing? This research question was approached through analyzing students' first drafts of descriptive paragraph writings and answering the following specific questions:

Research Question 1: What is the difference in the syntactic complexity present in the post-treatment paragraphs of the students who participated in the synchronous versus asynchronous CMC pre-writing discussion?

Research Question 2: What is the difference in the amount of information present within a single focus of the post-treatment paragraphs of students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 3: What is the difference in the quantity of the overall information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 4: What is the difference in the lexical information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 5: What is the difference in the vocabulary complexity present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 6: What is the difference in the rhetorical soundness present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 7: What is the difference in the presentation and development of the main point and its support present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 8: What is the difference in the overall language use present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Following the current views on interaction being beneficial for language learning and establishing of writing skills, it was expected that the synchronous and asynchronous CMC interactions would have positive effect on the quality of students' writing (Beauvois, 1997; Warschauer, 1999, 2004b). Further, it was expected that the discussion in the two CMC modes could influence the composition process in a different way considering the discourse differences of asynchronous CMC and synchronous CMC interactions (Sotillo, 2000). Thus, the overall hypothesis was that the textual aspects to be studied, namely syntactic complexity, lexical density, idea units, vocabulary complexity, rhetorical soundness, presentation and development of the main point and its support, and overall quality of language use, would be influenced differently by synchronous and asynchronous CMC pre-writing interactions because of the specifics of the two CMC modes (Sotillo, 2000). It was difficult to formulate more specific hypotheses because of the limited research that focuses on the way CMC modes influence writing production of second language learners.

Qualitative Stage Research Questions

The leading research question addressed in the qualitative stage is the following: How do dyadic interaction, performed via asynchronous computer-mediated communication (ACMC) and synchronous computer-mediated communication (SCMC) pre-writing task and students' views on CMC and writing influence writing development of adult intermediate level ESL learners?

This research question was approached by focusing on specific issues when analyzing the data collected during the qualitative stage. The following specific research questions helped to guide this analysis:

Research Question 1: What are the students' perceptions of the role of CMC in the process of establishing their writing skills?

Research Question 2: What patterns of dyadic interaction do participants manifest during the asynchronous and synchronous CMC interaction process?

Research Question 3: What are the factors that influence the CMC pre-writing interaction process? How do these factors influence the interaction process?

Further, the qualitative stage was extended through multiple case-studies. They aimed to reveal the specifics of the processes that took place during the pre-writing interactions and their relations to the following writing through closer examination of the pre-writing interactions and following writings of eight purposefully selected participants. The researcher questions addressed through these case-studies were:

Research Question 1: How do peers participate in asynchronous and synchronous pre-writing CMC interactions?

Research Question 2: (a) How do they use the specific ideas and language generated during these interactions in their writings? (b) What are the differences and similarities in the implementation of these ideas?

Significance of the Study

Today, the field of L2 writing is affected by various changes – these include changes in the society, demographics, technology, and the discipline of writing itself. These changes have brought about a research focus shift from teacher to learner: a substantial portion of the current writing research is focused on student collaboration during the revision and editing stages of the writing process. Recent studies have also examined student-teacher interaction in the process of feedback provision during the writing process (Ferris, 2003; Hyland & Hyland, 2006a). The current study aimed to investigate the interactions that occurred in pre-writing stages and were completed via two different modes of CMC and how these interactions influenced the development of L2 writing skills. Thus, the study is viewed by the researcher as a contribution to the body of writing research through shedding light on communication and composition that occur in the initial planning and drafting stages of the writing process. Such an understanding would allow teachers to support learners through early intervention accomplished via more precise design and application of pre-writing tasks and creation of appropriate collaborative opportunities for planning, rather than postponing these until later stages of the writing process. In other words, it is viewed that understanding the specifics of the initial stages of the writing process would allow for providing learners with opportunities to construct actively and effectively their writing – starting at an early

stage – which should positively influence the overall writing process (Ferris & Hedgcock, 1998).

The current study also sought to provide a better basis for understanding how learners collaborate via CMC. It was thought that findings from this study would extend our knowledge base of collaborative processes in the context of writing instruction and would provide a better foundation for developing effective teaching approaches and practices consistent with changes in the society, technology development, and writing theory and practice. In order to answer modern societal demands for effective incorporation of technology into the learning process (Warschauer, 1999), the current study aimed to reveal how adult ESL learners used the documented CMC interactions when composing their first drafts. Thus, the researcher believed that studying factors that influence CMC interaction, CMC patterns, and how they influence pre-writing processes addresses the current needs of learners and society and would add to the body of L2 writing research.

<center>Inference Quality and Inference Transferability Considerations</center>

In the qualitative and mixed-design research paradigm, different terminological approaches are used when the quality of a study is addressed. Maxwell and Loomis (2003) address the validity of qualitative and quantitative stages of a mixed-design studies subdividing it to internal validity and generalizability. Merriam (1998) discusses case study quality in terms of validity and reliability. Furthermore, Patton (2002) and Lincoln and Guba (1985) in the context of qualitative research, propose the terms *credibility* a term that corresponds to internal validity in the qualitative research,

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transferability – corresponding to external validity, *dependability* – corresponding to reliability, and *confirmability* – corresponding to objectivity.

In this study, when issues related to the Qualitative and Quantitative stages were separately addressed the "traditional" terms, i.e. *internal, external validity, reliability, objectivity* for the Quantitative part were used; while in the Qualitative part the terms proposed by Lincoln and Guba (1984) and Patton (2002) presented earlier were used. When addressing issues related to the study as a whole, i.e. embracing the Qualitative and Quantitative stages, the terms proposed by Teddlie and Tashakkori (2003) were used. Specifically, the authors suggest that the terms *inference quality* and *inference transferability* are more appropriate when summarizing issues related to mixed-design studies. They define *inference quality* as a construct that addresses issues related to the Quantitative stage internal validity and the credibility of the Qualitative stage, while *inference transferability* addresses issues related to the Quantitative stage external validity and Qualitative stage transferability (Teddlie & Tashakkori, 2003). Further in this section, the study design considerations related to inference quality and transferability will be shortly discussed; they will be addressed in more detail in Chapter III.

The data were collected at the intensive English language program (IEP) of a large urban state university in the Southeast United States. An important delimitation of the study was the fact that the researcher chose to collect data from a single educational setting; this decision was made in order to minimize the history threat to internal validity (Onwuegbuzie, 2003). To obtain higher inference quality of the findings and to guarantee better control of the experimental settings for the Quantitative stage of the study, the

students were randomly assigned by the researcher to two treatment groups –

synchronous and asynchronous computer mediation groups, thereby diminishing the

statistical regression and selection threats. However, the history threat may not have been

entirely eliminated because the two groups had different instructors. This threat was

further diminished by the fact that the groups followed the same curriculum and used the

same textbook and they wrote the two paragraphs based on the same tasks and using the

same referential material.

The Quantitative stage of the study had a considerable threat to the external

validity, using the framework of Onwuegbuzie (2003). The sample was unlikely to

include representatives of the vast variety of the ESL student population in the United

States, which posed a threat to population validity. Taking into account the fact that the

internal and external validity of the findings pertaining to the quantitative stage of the

study may have been affected by researcher bias (Onwuegbuzie, 2003), the use of T-unit,

idea unit mean length, idea unit number, lexical density, vocabulary complexity, and

multiple-trait scores of the writing samples was calculated. This calculation was

performed following strict unified procedures described in Chapter III. In order to

minimize the research threat further, the researcher trained the ESL instructors how to use

the writing assessment instruments selected for the study. Thus, 25% of the writing

outcomes were scored independently by the researcher and the teachers, the outcomes of

the scoring were compared, the achieved inter-rater reliability was above 90%.

The credibility, transferability, dependability, and confirmability of the qualitative

findings were assured through the techniques of prolonged engagement, persistent

observation, triangulation, and non-student participant member checking (Lincoln &

Guba, 1985). Prolonged engagement and persistent observation techniques are expected to allow the collection of thick data relevant to the research questions and to support the credibility of the findings and interpretations produced in the study. Further, multiple sources of data were considered to confirm the emerging themes and to formulate the findings, which was expected to strengthen the inference quality and transferability of the study (Merriam, 1998). The researcher collaborated with the actors of the case studies in the process of specification and conceptualization of the emergent themes; these actors presented the cases that maximized the difference in the phenomena of interest strengthening the inference transferability of the study (Merriam, 1998).

Assuring the quality of data collection and interpretation in each stage of the study is perceived to allow for high inference quality and inference transferability of the findings of the study as a whole. In order to assure the quality of the inference, the study was carefully designed, which provided a basis for rigorous interpretation of the data collected. Further, inference transferability was determined by providing strict procedures for data collection and careful description of data analysis. This was viewed to be necessary criteria that assured sufficient information about the context in which the study took place and clear presentation of the reasoning process that led to drawing of the final conclusions.

<div align="center">Definition of Terms</div>

Achievement level. In this study, achievement level was based on students' writing gain scores as measured by the pre-treatment and post-treatment multiple-trait rubric scores.

Asynchronous Computer-mediated Communication. This is communication facilitated by computers that does not require a common clock for the interlocutors and can be performed with little or significant delay (Warschauer, 1999). This type of communication can be completed via e-mail or electronic bulletin/discussion boards. In this study, the abbreviation *ACMC* will be used. The study focused on *ACMC* performed on a discussion board hosted on an online courseware – Internet Classroom Assistant version 2 (ICA2) (Nicenet, 1998).

Computer Assisted Language Learning. Levy (1997) defines computer assisted language learning (CALL) as "the search for and study of the computer in language teaching and learning" (Levy, 1997, p. 1). In this study, the abbreviation *CALL* will be used.

Computer-mediated communication. Computer-mediated communication refers to communication of humans facilitated by computers. There are two modes of computer-mediated communication: synchronous, in which the communication process develops in real time (usually performed in a chat format), and asynchronous, in which the communication is performed with delay via email or electronic bulletin boards (Warschauer, 1999). Communication exchange in both modes was investigated in the current study. In this study, when referring to computer-mediated communication, the abbreviation *CMC* will be used.

Communication Task. In this study, a task was viewed as communicative activity focused on meaning that involves language comprehension and manipulation; this activity can stand alone but is also designed to support the development of specific genre writing skills through a range of communicative procedures in a specific sociorhetorical

situation. When constructing this definition, the researcher was guided by two definitions of tasks that complement each other, that of Nunan (1989) and Swales (1990).

Communication Tasks Typology. Tasks assigned to learners are classified depending on the way the information is available to them (Pica, Kanagy, & Falodun, 1993). The Communication Tasks Typology includes three basic types of tasks. When performing the first type of task, *one-way exchange*, learners communicate based on information that is known only to one of the learners. The goal of the other members of the group is to find the missing information during the communication process. The second type, *two-way exchange*, requires pieces of information that are available to the learners to be used when constructing the whole. Finally, the third task type, *reaching agreement*, is performed when all learners have the same information and, based on this information, they need to reach an agreement. The *two-way exchange task* will be used in the current study.

Distinct Lexical Item. The same lexical items that appeared one or more times in either the CMC interaction or the post-treatment paragraph were considered to present one distinct lexical item (DLI).

Idea Unit. In this study, idea unit is perceived to be a clause that contains one verb phrase and the noun and prepositional phrases, adverbs, and so forth that belong to it is defined as an idea unit (Chafe, 1985).

Interaction Patterns. This term addresses the dynamics of small group or pair interaction behaviors (Stroch, 2002).

Intertextuality. Intertextuality presents the understanding that a text is related to other texts and is a part of a network of textual relations (Allen, 2000). In the current

study three levels of intertextuality were considered: (a) lexical level with unit of analysis lexical item; (b) idea unit level with unit of analysis idea unit; and (c) organizational level with unit of analysis the pre-writing discussion organizational suggestions such as topic sentence, supporting ideas, and conclusions, and their relation to the draft organization.

L1. This is an abbreviation for first language or native language used in literature related to language acquisition (Ellis, 1994).

L2. This is an abbreviation for *second language* that refers to the language that is not the native language of the learner and is learned in a country where it is either the official or the dominant language (Ellis, 1994).

Lexical Density. The ratio of the lexical items count to the total number of clauses is defined as lexical density. Lexical density reveals the average amount of lexical information per clause. It allows for the identification of the richness of learners' active vocabulary as demonstrated by the number of unique words used (Halliday, 1989).

Lexical Item. In the current study, it was considered that for all content words' morphological variations "belong to the same lexical item: for example, *differ, differed, different, difference, differing, differently* are all instances of one lexical item" (Holliday, 1989, p. 65).

Multiple-trait Rubrics. Rubrics that state specific criteria for assessing the quality of writing accounting for the given topic, the genre, and specific textual aspects are defined as multiple-trait rubrics (Ferris & Hedgcock, 1998).

Post-process writing theory. A theoretical and pedagogical approach that supports the view that there is no one generalizable writing process. Rather, writing acts are communicative public interactions occurring in specific contexts.

Synchronous Computer-mediated Communication. Type of communication facilitated by a computer in which no time delay occurs. In this study, the abbreviation *SCMC* was used to refer to a text-based synchronous communication performed via Language Education Chat System (L.E.C.S): a free web-based synchronous conferencing software designed especially for language teachers and learners.

T-units. This abbreviation stands for minimal terminal units. The T-unit consists of the main clause of the sentence including the subordinate clauses and is used for syntactical-level text analysis (Hunt, 1965).

Vocabulary complexity. Vocabulary complexity is the richness of the active vocabulary of the participants on a given topic.

Unique Lexical Item. Each occurrence of a lexical item in the studied texts (CMC interactions and post-treatment writings) was identified as a unique lexical item.

Writing-as-process theory. This theoretical and pedagogical approach presents writing as a non-linear continuum of decision-making, planning, and audience consideration (Grabe & Kaplan, 1996).

Organization of Remaining Chapters

The following chapter, Chapter II, provides a discussion of the literature related to the present study. The main trends in development of literacy theory, writing process theory and approaches, CMC in the second language classroom, and task types are presented. In Chapter III, a comprehensive description of the study design, settings, and participants is provided. The data analysis and results of the qualitative and the quantitative stages of the study are presented in Chapter IV. Further, the dissertation continues with Chapter V, in which the eight instrumental case studies are represented.

Finally, Chapter VI provides summary and discussion of the findings as well as

recommendations and implications.

CHAPTER II: LITERATURE REVIEW

Overview

This review of literature presents the current trends in research and education that influence the field of writing in general and, more specifically, the field of L2 writing and CALL. The significant influence of Writing-as-process theory on L2 writing research focus and practice is discussed based on the works of researchers such as Cooper (1989), Emig (1971), Faigley (1994), Grabe and Kaplan (1996), Hairston (1982), Johnson (2004), Matsuda (2003), etc. that contributed to the development of the field. Writing-as-process theory building is reviewed in conjunction with other trends in writing research that focus on the textual features of writing and is further examined in the context of the social trends in the writing literature.

Another important development in L2 writing which is examined in the current chapter is the role of the new technologies in education and more specifically in L2 education. Researchers agree that in contemporary research of education, the question is not whether technology can contribute to language learning but rather which forms of technology and what particular tasks are most effective (Blake, 2000; Oxford et al.,1998; Warschauer, 1999). Seminal research publications such as and Swaffar (1998), Sotillo (2000), and Warschauer (1999) that provide the basis for such agreement are presented in the literature review as well.

On the Nature of Writing

In the current writing research literature, writing is viewed as a process rather than as a final product. However, the interpretations of the nature of this process vary significantly within the process writing theory. Currently the expressivist and cognitivist movements within the paradigm of the writing process are approached critically by theorists who call for understanding of writing from a "Post-process" perspective, a perspective that is deeply concerned with the social nature of the writing phenomenon (Kent, 1999; Matsuda, 2003; McComiskey, 2000). Within the Post-process, there are claims that Writing-as-process strives to present a generalized process that would fit any writing; thus, it should be taken to the next level of theory building – post-process (Kent, 1999). However, these claims, are not entirely consistent with the process theorists' view on writing: within the paradigm of Writing-as-process, writing is viewed as "a complex of activities out of each all writing emerges" (Bizzell, 1986, p. 49), and writing itself is strongly imbedded into the social context (Grabe & Kaplan, 1996; McComiskey, 2000).

In this study, following McComiskey (2000) and Matsuda's (2003) position, the Post-process theory is not viewed as a complete rejection of process pedagogy or theories; rather it is perceived as their continuation. "[P]ost-process might be more productively defined as the rejection of the dominance of process at the expense of other aspects of writing and writing instruction" (Matsuda, 2003, p. 78-79). Thus, the Post-process theory is perceived to further develop the Writing-as-process theory adding a "social turn" (Trimbur, 1994, p. 109) to writing research and pedagogy and recognizing the uniqueness of each writing act. McComiskey (2000) states that the nature of writing as a social rather than a solely an expressive or cognitive phenomenon does not

necessarily call for "a rejection of the process movement, but rather [presents] its extension into the social world of discourse" (McComiskey, 2000, p. 53). Thus, the multiplicity of writing theoretical positions could be better understood in the context of the history of writing process development.

The view on writing as a process emerged from the social and educational changes of the 1960s and 1970s in the United States. These changes strongly influenced the current trends in writing research and practice (Hairston, 1982). The need to incorporate and support non-traditional students in the higher education settings triggered a new view on writing and writing instruction among practitioners and researchers (Grabe & Kaplan, 1996). The work of researchers such as Emig (1971) and Hairston (1982) aimed to study students' writing focusing on how learners write rather than simply analyzing the final writing product analysis. Emig (1971) outlined several basic notions about the writing process such as its non-linearity influenced by the writer's goals and audience, unevenness and recursiveness influenced by learning progression, and the effect of collaboration on the quality of the process and final product. Another reason for researchers to focus on studying the writing process was the fact that the instructional practices based on this approach needed a theoretical foundation that would support them (Grabe & Kaplan, 1996). Thus, approaching writing as a process called for new understanding of text construction and the composition process itself.

However, researchers point out that there is no unity in the writing theory in regards with the nature of writing processes (Faigley, 1994; Grabe & Kaplan, 1996; Lockhart & Ng, 1995; Matsuda, 2003); moreover, in the field of L2 writing research and pedagogy, the rigid formulation of process approach has been opposed. In her 1991

overview of teaching of writing traditions, Ann Raimes (1991) presents several stages of writing instruction and research development. In the late 1960s and early 1970s writing was approached with strong focus on form. In this period, writing instruction aimed to reinforce and test the accurate application of grammatical rules and sentence combining. The main limitation of this writing approach, as outlined by practitioners and researchers (Raimes 1991; Zamel, 1980), is that students were limited to syntax manipulation tasks, and the complexity of writing was ignored.

Another influential trend in writing theory and instruction started in this period with Kaplan's 1987 article "Cultural Thought Patterns Revisited" – that of contrastive rhetoric. Although this early Kaplan's article was criticized for being too vague and generalize, it raised the attention on cultural differences. Kaplan stressed that these differences may shape writing and provided the foundation for the development of the field of contrastive rhetoric.

In the second half of 1970s the focus in writing research and instruction shifted to the writer. This shift was influenced by L1 writing research in the United States initiated by Emig (1971) and Zamel (1976). However, the overemphasis on personal reflection in writing allowed scholars involved in the study of academic writing to conclude that this approach cannot be a leading one in postsecondary academic settings. The late 1980s shifted the focus of writing towards the audience outside the classroom – focus on the reader. This approach focused on academic demands and discourse communities (Raimes, 1991).

A different classification of the development of writing approaches aligned with the L1 writing research development is provided by Grabe and Kaplan (1996). They

contrasted two periods in writing research: the first period addressed was *writing as a product approach* (the 1960s) and *writing as a process approach* (a period that started at the beginning of the 1980s). According to these authors, the complexity of developing writing skills in general had been underestimated up until the end of the 1960s. Writing was taught following a prototypical model of instruction, and little time had been devoted to the actual act of writing (Ferris & Hedgcock, 1998; Kroll, 1991). The product approach to writing, prevalent in this period, had been limited by concentrating on the final text produced by the students; thus, the procedures and strategies involved in the writing of coherent and readable texts had not been addressed.

In the early 1980s, Writing-as-process was widely accepted in the effort to answer at least some of the questions related to writing instruction. It freed the instruction from simplistic assumptions about writing, moved writing instruction from one-draft writing assignments to multiple drafting, stressed the recursive nature of writing that involves multiple stages including planning, feedback, focusing on content, revision, and editing, and pointed out the importance of audience consideration (Ferris & Hedgcock, 1998). In fact, researchers viewed Writing-as-a-process as a paradigm shift in the field of writing (Grabe & Kaplan, 1996; Hairston, 1982). It is important to note that Writing-as-process followed the development of the education philosophy. Four stages of development of Writing-as-a-process approach are described in the literature (Faigley, 1994; Grabe & Kaplan, 1996):

(1) The *expressive stage* was the first stage of the development of Writing-as-a-process approach. The main characteristic of this stage was the encouragement that writers received to look for their authentic voices. The main problem of this stage was

that it was assumed that the writers already have all the intellectual resources and simply need guidance to an appropriate outlet (Grabe & Kaplan, 1996).

(2) The recognition of this weakness of the expressive stage led the researchers towards the next stage, *the cognitive* (Grabe & Kaplan, 1996). In the early 1970s, the Writing-as-a-process approach was influenced by the findings in the field of cognitive psychology. Emig's (1971) case study research employed thinking-aloud methodology to investigate what writers are actually doing (at least on the surface) while writing.

(3) The beginning of the 1980s brought a new view on communication and writing in particular – writing as a social event (Grabe & Kaplan, 1996). In this *social stage*, views on writing were strongly influenced by the development of sociolinguistics and the Hallidayan functional linguistics. The social context that defines the particular writing purpose was viewed by a number of researchers such as Cooper (1989), Faigley (1994), and Ferris and Hedgcock (1998), and as crucial for the understanding of writing. The sociolinguistic view on writing required new methodology that would allow revealing the specificity of both the learner and the social setting in which the learner is functioning. Ethnographic methodology allowed for collecting naturally occurring data in meaningful social contexts. The main critique addressing the issues in this stage of Writing-as-a-process was methodological – the qualitative data collected in case study research do not allow for generalization and hypothesis testing (Grabe & Kaplan, 1996). However, the social approach brought new perspectives to language learning and writing research and situated it within a meaningful context, raising new research questions and providing foundation for new educational approaches such as whole-language approach (Goodman, 1989).

(4) Research and educational practices in *discourse community stage* address writing at post-secondary levels as it is occurring in social-rhetorical contexts (Cooper, 1986). The researchers who approached writing from the perspective of the social-rhetorical context, addressed the discourse communities, groups that include readers, writers, texts, and social contexts in which information exchange is performed (Swales, 1993). Swales defined a discourse communities approach as one that shares common public goals, is a forum of discussion, provides feedback and information to its members, develops discourse expectations and genres, uses a specific set of terminology, and has enough members to discuss matters of importance in a wider group. This approach is viewed as combining the whole-language approach but on a tertiary level. There are a number of issues related to the discourse community approach, such as the danger of empowering the elite members of the community, which could be an obstacle for knowledge exchange (Grabe & Kaplan, 1996). It is also important to state that the discourse community approach had a positive effect on writing curricula development in post-secondary settings through promoting the development of a community within a writing class. This was demonstrated by Bartholomae and Petrosky's (1986) study of a college-level writing class.

In the beginning of the 1980s, serious criticism of the expressive stage of the Writing-as-process emerged, such as lack of a strong theoretical foundation. In the late 1970s to mid 1980s, Flower and Hayes (1980) developed their cognitive model of writing. It was based on research involving protocol analysis. In their model, they interpreted the composing processes as consisting of three major components: (a) the composing processor; (b) the task environment; and (c) the writer's long-term memory.

According to the authors, within the composing processor, the following three processes are generated: (a) planning (generating ideas, organizing information, setting goals); (b) translating; and (c) reviewing.

This model has met the needs for a theoretical foundation of Writing-as-process and influenced the writing research community; however, it also raised questions and criticisms. North (1987) states that the model is too vague to meet the requirements for theory model building and raises a concern about the methodology – that protocol analysis (i.e. extraction of knowledge from verbal report) might not be a primary valid methodology for building a theoretical model. Finally, it was pointed out that the model does not allow addressing the differences between writing processes of novice and experienced writers (Grabe & Kaplan, 1996). In the 1990s, Flowers and Hayes (1980) continued their research addressing a range of difficulties which skilled and less-skilled writers might experience during the writing process, further investigating the task environment and writing processes and extending their approach to writing as a cognitively defined and contextually constrained activity. The main implications of their model are that it discovers that better writers have a richer sense of what they want to do when they write and the writing is a teachable process that involves a socially contextualized approach to writing. The main critique of this model is that it presents the skilled and less-skilled writers in the same continuum and seeks to describe features similar to all writers (Grabe & Kaplan, 1996).

Bereiter and Scardamalia (1987) proposed a model that identifies the differences between novice and skilled writers. This model addresses the genre and audience differences, and provides specifics of revision process and tasks. They outline two

models of writing: *knowledge-telling* and *knowledge-transformation*. *Knowledge-telling* is generally being employed by less-skilled writers who use fewer strategies that are generally useful for personal-experiences writing. Skilled writers may also use the knowledge-telling model when the task has been internalized. The second model, the *knowledge-transforming* model, explains a more complex writing process. In this model, knowledge-telling is just one of the components. The starting points of the whole writing process are the mental representation of the assignment and following problem analysis and goal setting. This larger model approaches writing as a problem solving activity in which the problem solving space and the rhetorical problem space are in constant interaction through problem translation and knowledge-telling processes. These spaces also are in constant connection with the content knowledge of the writer and his/her discourse knowledge.

From a cognitive perspective, these two models represent the two different ways in which writers compose (Bereiter & Scardamalia, 1987). The advantages of these models are that writing processes of skilled and novice writers are not viewed as one-dimensional; in addition, the knowledge transforming model accounts for the heuristic nature of writing, the content, rhetoric, and the discourse; it stresses the differences in the writing processes of writers with various levels of writing skills development (Grabe & Kaplan, 1996). Scholars in the field of composition research have also recognized certain limitations of the model, such as the fact that it does not account for context influence on the writing process, as well as how and when the writer makes the cognitive transition between the two models (Grabe & Kaplan, 1996).

In the 1980s, researchers also raised the question of the importance of the formal aspects of writing and problem-solving strategies. Genre-based approaches to writing addressed these questions identifying the importance of genre knowledge which supports students' writing development beyond the knowledge-telling stage (Grabe & Kaplan, 1996). This approach views language as a functional construct in which form gives structure for meaningful communication and is an integrated system (Painter, 1989). In his study of elementary school children's literacy development, Martin (1989) raises the question of the importance of practicing writing in a range of genres, thereby, empowering children's learning through controlling information in the process of using language for real purposes and integrating language and content. Researchers who adopted the genre approach to writing also concluded that genre is an important element of meaning-making. Kroll (1991) points out that teaching how to work with language effectively in order to communicate content would make students more successful learners and writers.

Recognizing the fact that genres are culturally embedded, Kroll (1991) points out that the study of genre makes the students aware of the different readers' expectations. The genre approach also allows the beginning writers to address the text on content and genre levels. The genre approach to writing was extended to higher levels of education. Swales (1990) states that genres comprise a system for accomplishing social purposes by verbal means, and the ability to use genre would support students in their learning and communication in academic contexts.

In the 1980s, in the field of second language acquisition (SLA), writing was studied based on the assumptions that first and second language writing processes share

basic features (Ferris & Hedgcock, 1998). For example, it was shown that, in the case of experienced second language writers there is a noticeable transfer of their first language writing abilities into L2 writing processes. In addition, it was observed that the text construction strategies of these writers were independent of and often more advanced than their L2 skills. Thus, it was confirmed that L2 writers have instructional needs comparable to first language writers (Cumming, 1989). However, the results of English-as-a-Second-Language (ESL) writing research also showed that the L2 learners have their unique writing instructional needs. Less experienced writers in their first languages, learners with lower L2 proficiency, as well as the sociocultural context of writing require special attention and additional research in the context of Writing-as-process (Ferris & Hedcock, 1998).

These unique needs of L2 learners require close attention when evaluating L2 writing. While textual approach provides important information about language skills development such as syntax complexity and vocabulary, the process of writing also should be studied from the social perspective taking into account meaning constructing, planning, audience considerations, and revisions based on feedback received from peers and the instructor (Ferris & Hedgcock, 1998). Furthermore, social interaction is viewed as a "pre-requisite for learning how to write" (p. 606, Lockhart & Ng, 1995); thus the special attention to teacher feedback and student collaboration when studying the writings of L2 learners could contribute to L2 writing practices (Ferris, 2003). These trends are consistent with the fact that the field of SLA emphasizes the dialogic nature of verbal communication in both oral and written discourse (Voloshinov, 2001). In the following sections of this chapter, writing research related to the text construction

elements that influence the process of writing as well as the role the social interactions that take place during the writing process will be presented.

Towards Understanding Text Construction

Writing-as-a-process approach focuses on text creation; however, the importance of accounting for more formal features such as syntax structure and vocabulary is also recognized. This recognition is based on the fact that the nature of text involves both structure and appropriateness of text in the written discourse; that is, language has both pragmatic function and form (Widdowson, 1978). In a SLA context, vocabulary and syntax mastery, along with appropriate written discourse functions of the text, are important features that lead to a performance that is closer to the native-like goal in the target language. The current research study attempts to address the process of text creation in the context of both surface and deep structures as well as to reveal the sociocultural factors that affect this process. The following sections of this review of literature address these different aspects of text construction.

In the traditional paradigm of text analysis, the focus is on the final product, and procedures that result in composing coherent and readable texts are not taken into account (Ferris & Hedgock, 1998). Grabe and Kaplan (1996) propose an overall text model that considers several approaches to text, which could reveal the specifics of text construction such as coherence, cohesion, and text functional-use dimensions. They conferred that an explicit model "is beyond current understanding of text constructing" (p. 79) and the model is rather descriptive. The authors attempted to lay out the components of text construction theory in order to provide guidelines for future exploration of how these components interact in a text. This model guided the

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researcher's decision regarding which textual features would be appropriate to examine in order to analyze the features of and detect the changes in students' first paragraph writings. Further, the textual features that were used to analyze students' texts, namely T-units, idea units, lexical density, and vocabulary will be presented in the context of Grabe's and Kaplan's model; the deep textual levels will be discussed in relation to the model and the multiple-trait grading rubrics that were used to analyze and assess students' text in the current study.

In Grabe's and Kaplan's (1996) model, text structure is analyzed on the surface level that examines syntax and cohesion components; the text is approached through analysis of its deep structure taking into account text semantics and coherence; thus, four basic components are outlined: on the surface level these are syntax and cohesion and on the deep level, these are semantics and coherence. These four basic components of the text can also be interpreted in terms of sentential and whole-text level and as well as in terms of writer-reader relation (text interpersonal features). Further, the model presents the Lexicon as a textual feature of dual nature that affects and is being affected by the syntax, semantics, cohesion, and coherence; thus, lexis is related to the surface and deep structure of text. Last but not least, text construction is influenced by factors placed outside of the linguistic boundaries such as reference and world background knowledge.

Examining Textual Features of Writing

Grabe and Kaplan (1996) stress the importance of clear understanding of three theoretical aspects for writing instruction: (a) what is the array of knowledge that one needs to possess in order to be a successful writer; (b) what are the skills that presuppose successful learning how to write; and (c) what are the social contexts that shape the

successful writing instruction. They also point out that more research is needed in order to move towards clearer consensus regarding these aspects of writing instruction. The current research presented in this dissertation aims to focus on three main aspects of text that are outlined in the model proposed by Grabe and Kaplan (1996): (a) on surface (sentence) level analyzing the smaller portions of text, (b) on the overall text discourse – embracing deep structures of text, motivations for form factors as well as factors outside the linguistic boundaries, and (c) how different texts relate to each other (Lemke, 1985). This third aspect is not explicitly presented in the model but is logically related to it through the features of the model that lay beyond linguistic boundary, namely "Reference" and "World background knowledge" features.

T-units. In the research tradition analyzing the text surface level, the concept of the T-unit has been viewed as one of the central constructs to be examined in the students' writing (Gaies, 1980; Grabe & Kaplan, 1996; Hunt, 1965). Hunt (1965) defines T-unit as the main clause of the sentence including the subordinate clauses, the following are examples of five separate T-units: "*The sailor finally came on deck. He was tall. He was rather ugly. He had a limp. He had offered them the prize.*" In his 1965 study Grammatical Structures at Three Grade Levels, Hunt found out that L1 students' writing increases its complexity across the grades, as measured by mean length of T-units. He concluded this growth to be uniform and to progress with the L1 speakers' age.

When discussing the application of T-unit measure in analyzing writings of adult second language learners, Gaies (1980) pointed out that although L2 acquisition by adults does not follow the developmental sequence of first language development, the syntactic maturity of adult second language learners undergoes similar sequences and its growth

could be measured through T-unit analysis. Further, based on data collected in L2

context, Larsen-Freeman (1983) concluded that T-units could be a reliable indicator of

second language learners' development. The specific measurements involving T-units in

Larsen-Freeman study were the average number of words per T-unit and the average

number of words per error-free T-unit, where each T-unit was ranked depending on the

error type in terms of syntax, vocabulary, and orthography. Therefore, Larsen-Freeman

(1983) along with other researchers (Gaies, 1980), raised the issue of taking into

consideration only error-free T-units when analyzing L2 learners' language production.

While the errors in the L1 learning process are less characteristic, the occurrence of errors

in the L2 learning process is frequent, and in order to account for the developmental

errors in the T-unit analysis, only error-free T-units should be considered. However, the

criteria for error-free T-unit is interpreted differently in the research (Gaies, 1980). In the

current study, error-free T-units along with T-units with minor morphosyntactical errors

will be considered.

Applied to instructional settings, the T-unit approach offers a number of

recommendations to instructors that includes raising conscious attention to syntactic

form, providing tactics for revision, and increasing familiarity with syntactic patterns

(Grabe & Kaplan, 1996). Gaies' (1980) and Park's (1988) summaries of research findings

confirm that mean T-unit length increases with the language and writing maturity of the

writer. However, the limitations of this measure should be taken into consideration.

Although T-unit analysis presents a practical way to analyze student writing, it addresses

the issue of writing only on a syntactic level (Grabe & Kaplan, 1996). According to

Grabe and Kaplan, there is no evidence that "syntactic maturity" is a major factor that

improves overall writing, and this type of analysis should not be used as a single predictor of the overall quality of writing. In addition, keeping in mind that sentences are part of a larger text, the T-unit analysis does not reveal accurately the way the learners acquire the sentence structure in a rhetorical context (Bardovi-Harlig, 1992). Nevertheless, the T-unit methodology provides the best way to assess writing development when comparing groups that are different in terms of age or proficiency level. Unfortunately, this methodology does not provide an indicator that is always sensitive enough for comparisons of learners of similar language proficiency levels (Gaies, 1980; Grabe & Kaplan, 1996). Taking into account these limitations of the T-unit measure, in the current study, additional measures aiming to reveal the writing development of the participants was used; these methods are presented and discussed in the following sections.

Idea units. Another measure that aims to reveal the specifics of the texts produced by the participants in the current study is idea unit. This measure, proposed by Halliday (1967, cited in Chafe 1980) and further developed by researchers such as Kroll (1977) and Chafe (1980, 1985), first emerged in the analysis of spoken language production. Researchers noticed that the human mind has the ability to repair the unevenness of spontaneous speech, thereby creating the impression of smoothness. If the speech is listened to closely, taking into account the "repairing" property of the human mind, it is possible to notice that what seems to be a smooth speech is actually intermittent production. Halliday (1967, cited in Chafe 1980) called the segments "information units" (p. 13), later Kroll (1977, p. 89) proposed the term "idea unit" -- the term used in the current literature. Chafe (1980) defines the idea units as "linguistic expressions of focuses

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of consciousness" (p. 15). They allow identifying the information that the speaker/writer can comfortably "pack" in a single focus. The definition of idea unit provided by Hildyard and Hidi (1985) is "a clause containing a main verb, subject, and objects plus modifiers" (p. 294), a definition that is similar to the one used by Chafe (1985). Chafe (1985) provides the following examples of idea unit sequence: "…(a) So he takes the whole basket…(b) and puts it hear his bike… (c) lifts up the bike…. Puts the basket on … the front part of the bicycle… (e) and rides off." (p. 13).

When discussing the idea unit concept in a written discourse, Chafe (1985) also limits the single focus to a clause; he points out that previous research shows that difficulties in text production appear to take place when writers attempt to compose more than one clause at a time. Further, Chafe states that the fact that written language is produced at a slower pace in comparison with spoken language, that writers are usually free of worry about keeping the listener's attention, and that they have more time to construct their thoughts allow the written language to have generally longer idea units.

However, Chafe (1985) notes that readable texts are organized in a format that accounts for the reader's perceptions. This consideration is implemented by providing punctuation and other markers that would signal the boundaries of the idea unit; in addition, the length of an idea unit in a readable text is coordinated with the amount of information that could be assimilated by the reader to whom the text is addressed. Generally, the idea units in readable texts, as reported by Chafe (1985), are approximately 11 words long compared to 7 words in spoken language. In addition, idea units in a readable written text tend to be more complex and interdependent in comparison with spoken language: devices such as nominalization, attributive adjectives,

pre- and post-posed present and past participles, prepositional phrases, and complement phrases (for a full list of devices see Chafe, 1985, pp. 109-110) are used to achieve this interdependency and complexity.

In language research, idea units are most often used in studies related to recall as a measure of how information received either through listening or reading is remembered and reproduced by language learners (Carrell, 1987; Hildyard & Hidi, 1985; Wong, 2003). In the current study, idea units were used as one of the measures of students' text analysis. This decision was made based on Chafe's (1985) suggestion that idea unit qualities, including its length, influence text readability. In addition, the idea unit presents a way to identify the quantity of information that the learners can handle in a single focus (Chafe, 1985). It is perceived that this measure would allow discussing quality and quantity of the texts written by the participants in the context of the research questions posed in the study. More specifically, the idea unit would help identify how much information the students attempt to handle in one attention focus. This was measured through the mean length of idea units, while the quantity of information the students attempt to handle in a paragraph was measured by the total number of idea units used in the paragraph writing. Because using idea units allowed the researcher to focus on the quantity of information that the learners were able to communicate in their writings, and the morphosyntactical features of their writing were measured in T-units (as discussed in this chapter and Chapter 3 of the current paper), the researcher decided to use morphosyntactically correct idea units as well as idea units that contained certain errors but were unambiguous in the context of students' writings.

Lexical density. Grabe and Kaplan's (1996) model outlines lexicon as a text component that pervades the surface and deep features of text: "it both affects, and is affected by, each of the other four components" (p.64), namely syntax, cohesion, semantics, and coherence. It assists the syntactic construction of text and influences text cohesion and coherence. Thus, the lexicon analysis offers a way to understand the text that goes beyond the boundaries of the context in which the clause is viewed when T-units are considered.

Halliday (1989) points out that for such a fundamental category as clause, it is impossible to provide one explicit definition. In his "Spoken and Written Language", Halliday (1989) extends the interpretation of clause, defining it as a functional unit that has a triple construction of meaning: "It functions simultaneously (1) as the representation of the phenomena of experience, as these are interpreted by the members of the culture; (2) as the expression of speech function, through the categories of mood […]; and (3) as the bearer of the message, which is organized in the form of theme and exposition" (p. 67). Further, Halliday states that this clause interpretation allows addressing the difference between spoken and written language: written language is denser and this density could be measured when approached on a clause level. The amount of lexical information that could be incorporated into a clause, called "lexical density", may vary from none as in "It is" to high such as in: "The most advantageous shell colours are yellow in green areas, pink of leaf litter, and reds and browns in beach woods with red litter and numerous exposures of blackish soil" (examples used by Halliday, 1989, p. 69).

The term "lexical density" was proposed by Ure (1971) as one of the characteristics that could reveal the specifics of written and spoken language. Further, in his discussion of lexical density, Halliday (1989) makes a distinction between two main vocabulary classes: lexical and grammatical. Lexical items are the content words that participate in an open class membership, their semantic links could be extended indefinitely. He provides the following example to illustrate an open set of lexical items (the lexical items are italicized):

"So the word *door* is in contrast with *gate* and *screen*; also

with *window, wall, floor* and *ceiling*; with *knob, handle, panel*, and

sill; with *room, house, hall*; with *entrance, opening, portal* – there is

no way of closing off the sets of items that it is related to, and new

items can always come into the picture" (p. 63) (emphasis in the

original)

While lexical items participate in an open set, grammatical items are part of a closed system, for example personal pronouns contrast with other pronouns only. Halliday also points out that many language items could be easily classified as grammatical or lexical; however, with certain items, such as modal adverbs (e.g. always, perhaps), this distinction is more difficult and the lexical density analysis needs to be consistent when classifying such items.

What lexical density allows measuring via calculating the ratio of lexical items to the number of clauses is the information presented in a given text (Halliday, 1989; MacDonald, 2002; Read, 2000). In his analysis of written and spoken language produced by native speakers, Halliday outlines that language density is measurable, and when the

language is produced in comparable oral and written discourses, the density of the written one is much higher; in other words, the information is organized in a more intricate way. Moreover, according to MacDonald (2002), lexical density allows one to measure the degree of information packed into sentences. In her review of research involving lexical density, MacDonald reports that oral discourse contains about two lexical items per clause, whereas in scientific written discourse the lexical density could reach 11 to 13 items.

In SLA research, lexical density has been used as one of the measures that would allow analyzing the students' language production. The results of Mehnert's (1998) study of spoken language production allowed Mehnert to conclude that lexical density is affected by planning time – the more time learners have, the higher was the density of their language. The results of the same study also showed that lexical density is closely related to fluency – students who are more fluent tend to use a larger percentage of content words. Further, research shows that when considering lexical density as a measure, the prompts and the tasks that aim to elicit language production should be designed in such a way that they call for production of comparable texts in terms of their complexity (Read, 2000). Reid (1990) compared two essays written during the Test of English as a Foreign Language (TOEFL), this comparison revealed that the two types of essays compared were significantly different in terms of the three lexical measures he applied: the average length of the words, the lexical density as percentage of content words, and the percentage of pronouns.

When applying lexical density measure, it should be taken into consideration that lexical density is particularly higher in the noun and subject phrases (MacDonald, 2002).

This fact would make it more difficult to imply that the information is equally presented in the structures of the whole text produced by the student. Similar unevenness of lexical density was measured by Shih (2000) in a L2 production context. In her analysis of the largest Taiwanese Learner Corpus of English, she reports noun phrases to be four times higher in density than verb phrases. Therefore, lexical density is a useful measure that could be applied in text analysis including written language production of L2 learners (Cook, 2001). However, it may not be a representative indicator of overall text quality and information packing if used as single indicator (MacDonald, 2002). Moreover, this concern should be even higher when analyzing texts written by language learners. Although the texts written by language learners demonstrate the same relationship of density and text complexity as in texts written in authors' L1, and the degree of language proficiency is reflected in language density (Lauren, 2002; Mehnert, 1998), it is important to consider other measures that would help to make conclusions about the complexity of a text written by a language learner.

Vocabulary complexity. In the field of SLA teaching, lexis was somewhat neglected in the period of 1945-1970s. In the SLA literature, the heavy emphasis on structure is pointed out to be a possible reason for the fact that lexis was accounted for only as far as grading and selection of texts (Carter & McCarthy, 1988). In the early seventies, this lack of attention to vocabulary was recognized as a major gap in language teaching and consequently in SLA research. Wilkins (1972, cited in Carter & McCarthy, 1988) pointed out that while "without grammar very little can be conveyed, without vocabulary nothing can be conveyed." (in Carter & McCarthy, 1988, p. 42) (emphasis in the original).

In recent SLA research, vocabulary acquisition and teaching is a frequent topic. Researchers and theorists such as Chomsky (1995) and Cook (1998) state that the lexicon has a central role for language acquisition; it needs to be acquired in meaningful chunks that involve not only the word with its basic meaning but also the projection that a word has on the syntax context in which it is used. The interpretation of lexis implies that the vocabulary is linked to the context as a whole and more specifically to the syntax (Cook, 1998). Further, Cook (1998) suggests that, in the process of acquisition, vocabulary is the first one to be acquired and frequently learners use "inflectionless" phrases; only later do they progress to phrases with grammatical inflections. Thus, vocabulary use is an important element of language acquisition and examining the development of L2 learners' vocabulary could reveal specifics of the acquisition process.

The current research on vocabulary acquisition is guided by questions that would disclose the nature of word and lexical competence, and how they could be approached in the L2 classroom. Laufer (1997) summarizes SLA research that reveals lexical problems to be in the core of reading/comprehension difficulties of language learners. Haynes and Baker (1993) outlined that while factors such as syntactic complexity have impact on learners' reading comprehension, vocabulary is perceived to be the central issue. Further, based on empirical research results, researchers concluded that vocabulary accounts for the largest amount of variance in L2 students' writings (Astika, 1993; Koda 1993; Nation, 2001).

The richness of second language learners' vocabulary and the way in which learners choose vocabulary while writing is perceived by both university professors (Santos, 1988) and language learners themselves (Leki & Carson, 1994) as one of the

important factors that affect the quality of writing. A number of studies on writing use scoring methods that rank vocabulary as one of the main features of L2 writing (Nation, 2001). Furthermore, several different measures have been suggested in the research for examining the vocabulary development of language learners. The measure used in the current study is based on the "Lexical Frequency Profile" proposed by Nation (2001) and described by him as the most complete profile that avoids the drawbacks of measures such as lexical originality, lexical sophistication, and lexical quality. Using a software package developed especially for this vocabulary analysis procedure, text lexical characteristics such as number of total words, number of unique words, that is word families, frequency level of the vocabulary used in the text can be obtained. The frequency level is determined based on three word lists: General Service List of English Words compiled by West in 1953 and Academic Word List compiled by Coxhead (1998, cited in Nation, 2001). Accounting for the frequency with which the vocabulary items used by language learners appear in the target language adds to the precision of L2 learners' text analysis allowing the researcher to follow the writing changes not only in terms of quantity but also quality (Nation, 2001).

In the previous sections of this chapter, textual features of writing that focus on text surface level and link it to the deep level were discussed. Although lexis is related to deep textual features as well as surface, it is impossible to see this relation to deep features such as coherence, semantics, and stance without reaching for different ways of student text analysis. Further, literature related to functional analysis of texts will be presented.

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Examining Deep Textual Levels

   Coherence. While connected closely with the surface features of text, the deep

features have their own specifics; the analysis of these specifics could reveal important

issues of the writing process and development of language learners. An important

concept that has been traditionally part of writing research and instruction is writing

coherence (Bamberg, 1983; de Beaugrande & Dressler, 1981; Grabe & Kaplan, 1996).

The notion of coherence specifies how the information is organized in a text, and how

this organization affects the discourse topic (Lee, 2000). Text analysis that takes into

account this textual characteristic could get into deeper level of understanding the

processes of both writing and reading (Grabe & Kaplan, 1996).

   Brown and Yule (1983) argue that text coherence is to a greater extent a creation

of the reader rather than of the author. Although Writing-as-a-process approach

recognizes the importance of reader consideration in the composition process, as well as

the fact that the readers may impose their own interpretations of texts, accepting that the

reader is the constructor of text coherence would undermine important characteristics that

the text possesses. The text itself and consequently the writer are the main factors

conveying coherence; moreover, research results provide evidence that coherence is

contained in the text rather than imposed by the readers (Grabe & Kaplan, 1996).

   Grabe and Kaplan (1996), based on the analysis of several models (Mann &

Thompson, 1988, 1992; Martin, 1992; Meyer, 1975, 1985; Sperber & Wilson 1986; van

Dijk & Kintsch, 1983, cited in Grabe & Kaplan, 1996), outlined the following three key

characteristics of coherence: (a) it has a discourse theme; (b) it embraces the text from the

level of sentence to the top-level structuring; and (c) it provides information structure in

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order to guide the reader. These criteria closely relate to the functional dimensions of texts; in other words, they reveal how the writer considers the reader, how the subject matter about which the writer is composing affects the process of composition and the text itself, and how the background knowledge of the writer shapes the text (Halliday, 1985).

Functional dimensions of text: stance. Coherence is also strongly connected with stance – the functional dimensions of text that reach to text creation on interpersonal levels (Halliday, 1985). The examination of the functional organization of text could reveal text characteristics that show authors' attitudes to the reader, subject matter, and writing situation thereby disclosing the social functions of writing (Cumming, Kantor, Powers, Santos, & Taylor, 2000; Grabe & Kaplan, 1996; Halliday, 1985). Further, the analysis of text performed on the functional level allows one to evaluate the structural appropriateness of the text; in other words this type of analysis allows assessing if the text elements such as use of direct speech structures correspond with the text style (Grabe & Kaplan, 1996).

The analysis of text functional dimensions is concerned with the way the text elements are combined rather than with what elements are combined. Different authors approach this notion of stance from different perspectives. In the early approaches to functional text analysis, Chafe (1982) develops two dimensions of text construction: text involvement/detachment and text integration/fragmentation. Enright, Grabe, Koda, Mosenthal, Mulcahy-Ernt, and Schedl (2000) along with Grabe & Kaplan (1996) emphasize the relation of the writer to the reader and text. Further, Enright et al. (2000) and Grabe and Kaplan (1996) state that patterns of lexico-syntactic elements construct the

text and proposes text dimensions that are empirically identifiable in the texts rather than determined a priori. These dimensions are: rhetorical intention, interactivity, referentiality, immediacy of context, persuasion, abstractness, elaboration, evidentiality, and genre (Grabe & Kaplan, 1996).

Scoring Rubrics: Accounting for Deep Textual Levels

When discussing the criteria for analysis and assessment of L2 learners' texts, researchers agree that there is no single measure that could be applied in order to reveal all or at least most aspects of text that constitute its quality. To find an approach to text analysis that would allow maximizing the precision and detail of text construction analysis and assessment is still one of the main objectives of writing research (Cumming et al., 2000). A possible way to approach writing while accounting for its complexity is the application of scoring rubrics that would be designed with both surface and deep features of writing in mind. There are four summative methods for approaching students' writing: holistic, analytic, primary trait, and multiple trait. These methods could be used both in large-scale testing as well as in regular classrooms (Ferris & Hedgcock, 1998).

Ferris and Hedgcock (1998) present holistic scoring as a way to assess the overall text quality. Based on this assessment, the grader could make conclusions about the learner's proficiency level. When applying holistic scoring, the reader approaches the text as one entity instead of looking at specific dimensions of writing; this method emphasizes the strengths of the writer while involving examination of a wide range of text features (Cohen 1994; Ferris & Hedgcock, 1998; White, 1994).

Another approach to text written by language learners is analytic scoring. This type of scoring would assist the text reader in the process of weighting distinct textual

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components. These components could include surface and deep textual features, for example the *ESL Composition Profile* created by Jacobs, Zingraf, Wormuth, Hratfiel, and Hughey (1981), contains five criteria that focus on content, organization, vocabulary, language use, and mechanics. Another example of analytical approach to learners' writings is provided by Ferris and Hedgcock (1998), this is the *Essay Rating Profile* – an adaptation of Jacobs et al. (1981) model (Ferris & Hedgcock, 1998). Although this type of scoring is perceived to be easy for teachers to implement, it weakens the recognition of the complex connection in the written discourse (White, 1994).

The third and the fourth types of summative writing assessment methods described by Ferris and Hedgcock (1998) are primary and multiple trait scoring. The strength of primary and multiple trait scoring is that the text is approached based on the context of the specific writing under analysis (Ferris & Hedgock, 1998; White, 1994). The goal of this approach is to develop salient criteria and traits for successful writing based on genre and topic in the context of the writing task. The fact that trait scoring does not address writing as generic texts but rather focuses on the specifics related to the writer (e.g. writing task, genre, topic, and audience), makes the method highly flexible and it allows guiding students throughout the writing process. The trait scoring technique could support different stages of the writing process – teaching, drafting, and feedback (Ferris & Hedgock, 1998). Trait rubric also support the text analysis that seeks writing skills diagnostics. Cohen (1994) and Ferris and Hedgcock (1998) pointed out that comparing to holistic and analytic scoring, trait-based scoring has a number of advantages. First, this type of scoring has higher face validity because it is related directly to the task. Second, it provides higher content-related and construct-related validity

because when the specific scoring instruments are developed, the expectations, textual conventions, and the writers' skills are taken into account. Using trait-based instruments, it is also easier to reach a consensus among raters applying trait-based descriptions that are tied much closer to the task than the items of holistic and analytic instruments. However, the major drawback of this approach to L2 writing analysis is that it could be time consuming for classroom application. For the current study, the multiple-trait method was applied using three traits that allow to focus on the deep and surface features of the text: (a) rhetorical soundness; (b) presentation and development of the main point and its support; and (c) overall language use (Ferris & Hedgcock,1998).

Beyond Linguistic Boundary

The model of text construction proposed by Grabe and Kaplan (1996) and used to conceptualize the approach to students' texts in the current study extends beyond the linguistic boundary incorporating features such as reference, world background knowledge, memory, emotion, perception, intention, logical arrangement (rhetorical patterns), and situation. Grabe and Kaplan (1996) point out these elements to be of a great importance for understanding text construction – they are "frames for organizing the content and context" (p. 79).

By including the features that lie beyond the linguistic boundaries in their model, Grabe and Kaplan (1996) suggest that staying within the boundaries of text surface and deep levels, would not allow one to understand how writers construct their texts. The authors of the model indicate that text construction is influenced by the previous experiences of the writers. Further, staying in the same stance, it could be implied that these experiences include other texts either read or created earlier by the writer in a

different discourse, that a reader of a particular text brings his/her own frames for organizing content and context and transfers it to his/her own writing creating intertextual connections. Considering the above from the perspective of the current study, whose goal is to analyze how pre-writing text based CMC discussion influences language learners' writing, it was of interest to the researcher to find how the texts created in a CMC collaborative discourse influence the participants' paragraph writings. It was assumed that intertextual analysis approaches the text from the standpoint of language use in communities (Lemke, 1985), and more specifically in language learning communities; this point of view on text does not contradict but rather extends the process view on writing (Cooper, 1986).

The modern theorists engaged in text analysis view text as an entity that does not have an independent meaning (Allen, 2000). Thus, texts, literary or non-literary, cannot exist as self-sufficient entities because they do not function in a closed system (Still & Worton, 1990). Intertextuality in text analysis is an interdisciplinary approach to text (Worton & Still, 1990), not a transparent term that could be defined in a simple manner (Allen, 2000). This study adopts Allen's (2000) view of intertextuality as an approach to text as a part of a wider textual network.

The concept of intertextuality is widely applied in the literary analysis and cultural studies (Allen, 2000; Lemke, 1985). In the 1960s, Julia Kristeva first coined the term in her early attempt to combine Saussurean and Bakhtinian theories of language and literature (Allen, 2000); it was further utilized in poststructuralilst theories in an "attempt to disrupt notions of stable meaning and objective interpretation" (Allen, 2000, p. 3). Further, Lemke (1985) points out that the meaning of every text and discourse is

influenced in an explicit or implicit way by other texts or discourses; thus, the discourse practices of a community affect the understanding of a particular text by creating systems of texts related through community practices.

In language learning context, intertextuality is perceived as preparing learners to deal with the relations of writers' own ideas with the ideas of other authors (Blanton, 1999). This preparedness could support in various ways the learning process: (a) through incorporating reading practices that promote comprehension and writing (Ferris & Hedgcock, 1998), (b) through engaging in writing activities that expand beyond the learners' own experiences, thus moving from the mode of writing as knowledge-telling to writing as knowledge-transformation (Bereiter & Scardamalia, 1987), (c) through encouraging learners to engage in self-reflection (Blanton, 1999).

Intertextuality is directly connected to the literacy practices of the community. Although it is traceable in the written product (the text), it presents actually part of the writing process through revealing the engagement of the writer with other texts before, during, and after text creation (Blanton, 1999). Lemke (1985) proposes three specific features of texts that could help interpreting if two or more texts form a strong intertextual set: the Mode, the Tenor, and the Field. Considering these dimensions, intertextuality manifests itself "across differences of medium and genre (Mode), of role relationships and interactional ploys (Tenor), and to some degree across activity type and overt topic (Field) (Lemke, 1985, p. 279). This approach to the text would allow one to follow the text construction process, taking into account the specifics of the participants: "The participants themselves, in making these texts, may make them in relation to each other, may make meanings through the relations they construe among them that penetrate

into and beyond of isolated meanings of the texts by themselves" (Lemke, 1985, p. 280). Although in the above quote, Lemke does not refer specifically to language learners, the quote is perceived by the researcher as applicable to them based on the fact that learners create and function in discourse communities that have their specific socioeducational dimensions (Ferris & Hedgcock, 1998; Grabe & Kaplan, 1996).

Pre-writing: From Solitude to Collaboration

In the writing process research literature, the interpretation of the pre-writing stage is consistent with the development of the understanding of writing process. Rohman (1965) defines pre-writing as a stage of discovery within which the writer "assimilates his subject to himself" (p. 106, Rohman, 1965) and situates pre-writing within a pre-defined, linear process of pre-writing, writing, and re-writing. Further, Morris (1968) describes pre-writing as an important period that follows concrete linear steps during which "the student probes his vast memory banks and attempts to find new, untried angles from which to view his subject" (p. 24), she reports that her L1 students perceived the pre-writing period as an "agonizing one" (p. 24). Building on the pre-writing research of the 1960s, Kytle (1970) proposes a three-stage pre-writing strategy that involves analogy: (a) first stage – exploration and discovery of the subject through outlining as many points as possible and classifying them; (b) reduction of the subject; (c) thesis formation. While these studies recognize the importance of the pre-writing stage, they view it as a predetermined and linear sequence of steps that involves little or no interaction among the writers; thus, isolating the writer form the social environment within which writing process develops.

The recognition of the social nature of writing and the importance of interaction for the writing process brings a different perspective on pre-writing. Rodrigues (1983) proposes collaborative activities that aim to generate and organize ideas before students start the actual writing. Based on her study of L1 remedial high school students, Abbott (1989) suggests that after being involved into brainstorming small-group activities during which ideas were talked-out, students were more selective when choosing ideas to include in their essays and felt more positive towards their writings.

In the L2 writing research of the 1980s, the process of schema building that aims to assure the readiness of learners to write and involves reading assignments as well as in-class collaborative activities was recognized (Ferris & Hedgcock, 1998; Melvin & Stout, 1987; Smith, 1996). Although Spack (1984) in her study of one ESL college student does not discuss the collaboration as part of the pre-writing process, she addresses pre-writing within the schema framework as an invention process which "does not occur passively; it is the result of diligent effort on the part of each writer to self-define a rhetorical problem" (p. 664). Smith (1996) describes how pre-writing process of L2 learners was supported through subject knowledge building, idea sharing, and discussion of authentic materials in a third year French composition course. Further, Ferris & Hedgcock (1998) provide pedagogical suggestions proposing several pre-writing strategies that can be performed within a L2 collaborative process. They divide them into two categories: (a) unstructured pre-writing – freewriting, speed writing, brainstorming aim at building writers' fluency; and (b) structured pre-writing, for example clustering and cubing activities that assist students in the process of topic exploration, strategies development, and relating new to already exiting knowledge.

In the contemporary writing research and pedagogy collaboration is recognized as an important vehicle of the learning process, it is an essential component of writing instruction that promotes the creation of writing communities within the class and further prepares learners to participate in larger discourse communities (Grabe & Kaplan, 1996); however, the research on its influence on the L2 writers' writing skills development is limited when the pre-writing stage is considered. The studies discussed in the comprehensive writing research reviews by Ferris (2003), Ferris and Hedgcock (1998), Grabe and Kaplan (1996), Silva and Matsuda (2001) mainly address the collaboration in the writing process at stages that take place after the preparation for writing and planning are completed, focusing on collaborative writing and teacher and peer response. In the following section, a review of literature that presents interaction in the process of collaborative writing and peer feedback is presented. The researcher views these studies to be relevant to the present study; they depict specifics of the meaning negotiation process and its influence on text construction, and it is assumed that the discussion of their findings will support the current study.

Collaborative Writing

In their analysis of suggested teaching practices in writing at intermediate levels, Grabe and Kaplan (1996) present five main types of cooperative learning: (a) the Group Investigative method, developed by Sharan and Sharan in 1992, (b) the Learning Together Method, proposed by Johnson and Johnson in 1991, (c) the Structural Approach, proposed by Kagan in 1992, (d) Jigsaw, discussed by Aaronson in 1978, and (e) the Student Team Learning approach, designed by Slavin in 1990. In the context of Writing-as-process approach, the collaboration models are mainly researched when

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students compose together or when they provide feedback to each other analyzing and discussing already produced drafts (Ferris, 2003; Ferris & Hedgcock, 1998; Liu & Sadler, 2003; Nelson & Carson, 2006; Storch, 2002, Ware & Warschauer, 2006).

Peer Feedback

Researchers agree that collaboration encourages students to approach their work adopting the role of interested readers, commentators, elaborators, and evaluators (Liu & Sadler, 2003; Storch, 2002, Ferris & Hedgcock, 1998). Furthermore, students receive and provide feedback to their peers, thus assuming multiple roles in the writing process. This unique character of collaborative composition process gives writers the opportunity to approach the text from different perspectives and act on different levels of competency (De Graaf, Jauregi, & Nieuwenhuijsen, 2002; Dochy, Segers, & Sluijsmans, 1999).

Based on their study of university level students in a second-year Spanish-as-a-second language class, De Graaf et al. (2002) found that when writing collaboratively, students need to participate continuously in a negotiation process, reflecting on, analyzing, clarifying ideas and strategies. De Graaf et al. also reported that the students participating in their study felt that their collaboratively created texts were written better than were the ones they wrote individually. In the same study, the teachers shared the perceptions about the higher quality of the texts as well. However, the researchers found that teachers were concerned about the fact that the collaborative nature of students' texts did not allow them to assess the individual student's contribution to the final product.

In the context of collaborative writing, texts are composed in the process of mutual efforts of two or more students and the contribution of the individual writer is difficult to assess; however, researchers found that individual writing supported by peer

feedback promotes collaboration and has significant benefits (Ferris, 2003). Peer

feedback practices in L2 educational settings became widespread because of their

consistency with the principles of Writing-as-a-process Approach (Ferris, 2003). Both

practitioners and researchers shared this interest in peer feedback; thus, peer feedback in

L2 writing was not only widely adopted in L2 writing classrooms but also became the

center of numerous research studies (Ferris, 2003; Ferris & Hedgcock, 1998; Nelson &

Carson, 2006; Silva & Matsuda, 2001).

Dynamics and Patterns of Peer Feedback

Ferris (2003) points out that the dominant theoretical perspectives of peer

response research approach writing as a socially constructed activity that requires

audience consideration, self-direction, and critical reflection. In their review of research

on second language peer response, Ferris and Hedgcock (1998) outline peer review and

feedback as a complex process that incorporates a variety of interaction types.

Researchers identify stances of students' response as interpretive, prescriptive, and

collaborative; these stances incorporate various categories of comments such as generic,

critical evaluations, critical evaluations and suggestions, and critical evaluations and

extended suggestions (Mangelsdorf & Schlumberger, 1992, cited in Ferris & Hedgcock,

1998).

Further, researchers (Lockhart & Ng, 1995) linked the stances used in the

feedback process to the students' attitudes towards writing, giving and receiving

feedback, personalities, and the nature of the feedback task. Ferris (2003), in her

summary of peer feedback research, outlined the following findings: (a) there were

complex interaction processes that took place during providing/receiving feedback; (b)

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the major stance types of peer feedback identified were prescriptive, interpretive, and collaborative; with the collaborative stance being related to higher achievement; (c) the stances in the peer feedback process were further extended and described as authoritative, interpretative, probing, and collaborative; it was concluded that the authoritative and interpretative stances contributed better to the peer review/writing process; (d) while participating in writing activities that required peer feedback, students stayed on task and sometimes could assume roles that are counterproductive to the functioning of the group.

In addition, Storch (2002) addressed the issue of the dynamics of feedback interaction. She studied the patterns of interactions of 33 students in an advance university-level ESL class. Analyzing students' dyadic interaction, Storch (2002) accounted for the way learners approached the task they were given, the roles they adopted in the process of interaction, the involvement and contribution of each learner. The patterns of dyad interaction that were depicted by Storch were the following: collaborative, dominant/dominant, dominant/passive, and expert/novice. Two indexes were used to describe the specifics of each pattern: mutuality and equality. Mutuality was described by Storch as the level of engagement of each participant, while equality referred to the degree of control over the interaction. The dyads that demonstrated collaborative interaction patterns, worked in "joint problem space" (p. 128) offering alternative views on the discussed problems, looking for mutual agreements and resolutions demonstrating interaction of high mutuality and equality. When adopting dominant/dominant patterns of interactions, students expressed an inability to reach consensus or employed a high division of labor, which resulted in low level of mutuality. In dominant/passive dyads, the dominant participant demonstrated an authoritarian stance

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appropriating the task while the other participant took more passive role; thus, the level of mutuality and equality were fairly low, which resulted in less negotiation. Finally, when expert/novice patterns were observed, the expert participant, although taking control over the task, encouraged the novice to contribute to the collaborative process, which resulted in higher mutuality with lower equality level. Storch (2002) suggested that there were more evidences of knowledge transfer when collaborative and expert/novice patterns were observed.

 Incorporating peer feedback. One of the major questions related to the student feedback process outlined by Ferris (2003) and addressed by multiple studies is how the peer response is reflected in the writing outcomes. Mendonça and Johnson (1994) found that approximately 53% of peer suggestions were used in the following drafts; further, Mendonça and Johnson suggest that "peer reviews enhance students' communicative power by encouraging students to express their ideas" (pp. 765-766). The benefits of collaborative and interactive feedback process are also evident in a higher percentage of suggestions incorporated in the following drafts while non-interactive and defensive in its nature feedback process resulted in feedback that was not utilized (Nelson & Murphy, 1993).

 The type of revisions incorporated by students as a response to feedback made by peers and teachers address mostly the surface features of the text (Berger, 1990). Investigating the same issue, Connor and Asenavage (1994) noted that feedback sessions that focus more on surface issues may lead students to emphasize these features when revising. Therefore, the question of feedback training was raised in the L2 writing research community. In relation to this issue, Berg (1999) outlined the importance of

students' training prior participation in feedback sessions; this training should prepare students to address not only the surface features of writing such as grammar and spelling but also to share considerations that influenced text meaning and organization.

Based on their review of peer feedback research, Ferris and Hedgcock (1998) suggested principles of effective peer response activities. These principles include incorporating peer response into the writing course and modeling the process of feedback provision in order to support the development of skills that would allow carrying on an effective peer response interaction. The peer feedback process should sustain various peer response activities that would be designed with consideration of the individual student needs and class specifics; they should aim at establishing students' accountability for giving and incorporating feedback.

More recent research on peer response considers the channel through which this response is delivered. Liu and Sadler (2003) studied the process of peer response in 'traditional' and technology enhanced modes: 'traditional' being synchronous FTF and delayed paper-pencil, and 'technology enhanced' being using Word editing functions for asynchronous feedback and multi-user domains object-oriented (MOO) synchronous feedback. The researchers found that the incorporated feedback was much higher for the traditional groups, while the technology enhanced groups provide a greater amount of feedback. They also concluded that in the traditional mode, feedback was more effective when commenting synchronously, while the technology enhanced group worked more effectively when using the Word editing features.

The rationale for Liu's and Sadler's (2003) study for comparing 'traditional' and technology-enhanced feedback process is the fact that there is little research that

compares the effectiveness of traditional peer review with electronic peer review, as well as the fact that the rapid computerization of university classrooms calls for better understanding of the processes that take place in technology-enhanced environments. The use of computers for providing peer response and teacher feedback is in the focus of current research (Milton, 2006; Ware & Warschauer, 2006). These research trends, along with the recognition that in the contemporary society, the new technologies transform writing and more generally literacy practices (Warschauer, 1999), guide the following section of this chapter which will address the impact that the new technologies have on education and L2 teaching and acquisition.

New Literacies and SLA

In this section, literature related to incorporating computers into the processes of teaching and acquisition of L2 literacy and writing is reviewed in order to situate the current study within the discourse of the new literacies and SLA. First, an outline of the contemporary understanding of literacy is presented. This presentation is followed by discussion of literature that focuses on computer-mediated communication and its influence on literacy and writing in an L2 context.

The contemporary views on literacy place it within the sociohistorical context in which the literacy practices evolve, and are taught, acquired, and applied (Simpson, 2005; Warschauer, 1999); thus, literacy is viewed as a discourse that reaches beyond the ability to read and write; rather it is related, as other discourses are, to ways people choose to communicate with each other, express their deeds, and social group associations, their styles, and interests (Tyner, 1998). Graff (1981) formulates some common conclusions about literacy based on research: (a) literacy is embedded within history; (b) literacy is a

complex phenomenon both on theory and practice levels; (c) literacy incorporates social assertions and expectations as they vary in cultures and historical periods; (d) there are many if not infinite forms of literacies; (e) there are continua of literacies; (f) mastering of alphabetic literacy is not simple; (g) the individuals may take multiple paths to promote, teach, and acquire literacy; (h) society may take multiple paths to promote, teach, and acquire literacy; finally, (i) different forms of literacies coexist. These conclusions support the better understanding of fast emerging new literacy forms in the modern society.

Western society is reshaped by fast emerging new technologies (Lindenau, 1984), these technologies in turn, reshape our understanding and application of literacy practices (Kasper, 2000; Tyner, 1998; Warschauer, 1999, 2006, Ware & Warschauer, 2006). Moreover, literacy plays the role of a gate keeper for accessing and using these practices (Warschauer, 2006): the digital, information-oriented society requires literacy skills and competences that are closely related to the technology used for receiving information and communication (Kasper, 2000). This interrelation of technology and literacy is not new, technology and literacy have always been in constant interaction influencing and reshaping each other (Leu & Donald 2000).

The historical overview with which Waschauer (1999) opens his book "Electronic Literacies" illustrates this constant transaction of literacy and technology. While in the pre-Gutenberg era writing mainly involved transcription of memorized orally composed speeches and sermons as well as copying manuscripts, the invention of the printing press in 1450 shifted the scholarly reading and writing towards gathering and comprehending information from different sources. The availability of printed material also changed

education, allowing for new ways of conceptualization in the learning process. The mass industrialization of the 20th century added new dimensions to the Western concept of literacy as a means "to provide skills, knowledge, and social attitudes required for urbanized commercial and industrial society" (de Castell & Luke, 1986, cited in Warschauer, 1999, p. 3). Further, Leu & Donald (2000) point out the importance of the fact that in the 21st century, the society has entered a stage "of rapid and continuous change in the forms and functions of literacy. Today, changing technologies for information and communication and changing envisionments for their use rapidly and continuously redefine the nature of literacy" (Leu & Donald, 2000, p. 53). The electronic mediation and computers as new artifacts that entered people's life has altered the reality to the point where technology is being perceived as a new form of life (Aronowitz, 1992); the extent to which technology is altering modern life is determined by social and economic contexts (Warschauer, 1999).

In Western society, technology decentralized the workspace changed the nature of communication skills; it defined the fast and effective access to and processing of information as a key to success (Leu & Donald, 2000). Technology changes the classroom as well, researchers and practitioners point out that the modern pedagogical practices should aim for the development of literacies that are coherent with the societal transformations and would allow learners to fulfill their goals and dreams (Kasper, 2000; Warschauer, 1999). The Internet is one of the most important technological developments that is affected by modern literacy practices, and affects in its turn the literacy practices and the nature of literacy as a whole. In this context it is important to distinguish the computer-mediated communication and the World Wide Web as literacy and information

sharing environments (Warschauer, 1999). Following is a review of research that aims to reveal the specifics of the interaction and language learning processes that are supported by and situated in CMC environments.

CMC and its Role in the Writing Process

Warschauer (2004b) points out that constantly developing new technologies, along with the wide accessibility of personal computers, altered the reasons and the ways people write. Further, Waschauer states that these changes are so dynamic in their nature that it is difficult to document and analyze them. He views such an attempt for analysis as crucial for our understanding of how computer-mediated communication can be incorporated into the language teaching process. Computer-mediated communication (CMC) includes three main modes: synchronous, asynchronous, and hypermedia authoring (Warschauer, 1999, 2004b). Because the synchronous and asynchronous communication is in the focus of this study, the research on use of asynchronous and synchronous computer-mediated communication in teaching writing is presented further.

CMC has the unique nature of incorporating features of written and oral discourse. Based on Kaplan's (1987) distinction of oral and written discourse, it could be assumed that oral discourse requires a feedback loop that permits modification and correction synchronizing the meaning constructed during the act of communication. This provides basis for shaping the world in accordance to the language used. Therefore, as Kaplan (1987) states, even if the L2 speaker does not possess a complete inventory of sociolinguistic alternatives specific for the language in use, the feedback loop in oral communication will allow for modification and correction. Kaplan also points out that the speed of oral communication does not allow for extensive modification and planning,

whereas written language is almost entirely under the writer's control and requires provision of elaborated information exposing the writer's skills of text construction.

The above outline of oral-written discourse characteristics allows scholars to conceptualize research directions and findings in the field of SLA: CMC, due to the unique combination of oral and written discourse characteristics, could provide greater support in SLA discussion (Blake, 2000; Swaffar, 1998; Warschauer, 1999). Moreover, Warschauer (1999) stresses the fact that electronic literacy becomes an important aspect in the contemporary society that is essential to be addressed in second language classrooms. Swaffar (1998) summarizes the benefits of CMC for second language learners concluding that in CMC, second language learners engage in class interaction more frequently and with greater enthusiasm, producing greater amounts of language.

Blake (2000) notes the importance of considering tasks that learners are assigned while communicating via the computer. He points out that the task typology developed by Pica et al. (1993) can be applied in computer-mediated communication environments. In his 2000 study, Blake validates task typology in a computer-mediated communication environment with Spanish language learners. He also stresses the importance of further studies that would reveal how tasks are implemented and viewed by instructors and learners in computer-mediated communication environments.

CMC in the Second Language Classroom

There are three main aspects of communication in the focus of researchers when approaching CMC in second language context: (a) how students participate in CMC environments in terms of direction of their participation; (b) what is the target language output; and (c) what is the quality of the target language used in CMC interactions

(Ortega, 1997). Warschauer (2004) outlines similar areas of interest in his review of research on computer-assisted classroom discussion. In the next two sub-sections, published findings in the areas related to asynchronous and synchronous CMC are presented: the *Dynamics and Productivity* subsection address the quantity and direction of students' interaction, and in *CMC: Language Use* research findings about the quality of the target language output are presented.

Dynamics and Productivity

Researchers have found that the network communication environment creates a special communicative and linguistic community that differs in a number of ways from the face-to-face classroom environment (Beauvois, 1997; Kelm, 1992; Waschauer, 2004a). Networks provide a communication space that allows for noticing input and planning the output (Warschauer, 1997). The CMC environment allows for more opportunities for equal communication (Sullivan & Pratt, 1996; Warschauer, 1996). In this environment the communication process is more student-centered, compared to the face-to-face classroom: students can communicate in their own pace without waiting for the teacher's permission (Barker & Kemp, 1990; Faigley, 1990). The teacher offers guidance rather than models, thereby empowering the students to control their own discussions and develop cooperative relationships (Sotillo, 2000; Warschauer, 1996, 1997, 1999).

Learners who have introvert communicative styles are more willing to communicate compared with the traditional face-to-face (FTF) classroom where more vocal students often overtake the discussion. Students report feeling more comfortable when using CMC and have positive attitudes towards this mode of communication

(Beauvois, & Eledge, 1996; Kelm, 1992; Kern 1995). This increases the quantity of student participation as compared to FTF discussion: several studies reported three measures of students' participation to increase: (a) student talk vs. teacher talk; (b) directional focus of student talk, and (c) equality of students' participation: Kelm (1992) reported the total amount of student participation to be 92%, in the two classes Kern (1995) reported that the student participation was 86% and 88%, Sullivan and Pratt (1996) reported 85% student participation. The increase of student participation reported in all three studies cited above is significant considering the fact that the face-to-face participation, as measured by these three researchers, varied between 35% and 60%.

Although these results pertain to synchronous computer-mediated communication (SCMC) environments, similar processes were observed by researchers who studied asynchronous computer-mediated communication (ACMC) and, more specifically, e-mail in language classroom settings. Hartman, Neuwirth, Kiesler, Sproull, Cochran, Palmquist, and Zubrow (1991) found that students communicated more when they had the opportunity to use e-mail. Wang (1996) in a comparison of traditional paper-pencil and e-mail journal writing, found that students used longer sentences in their e-mail journals and asked more questions than did their peers who wrote the traditional form of journal. These results suggest that CMC dynamics increase the opportunities for student collaboration, Warschauer (1996, 1999, 2004b) points out that although computer-assisted classroom discussion is not the only way to involve students in collaborative activities, it is an effective way.

CMC: Language Use

Not only is the pace and dynamics of the interaction different in a CMC environment, the language that students produce differs as well. Considering that language learning as well as communication are complex processes, it is not surprising that the results of studies aiming to investigate the establishment of language skills when supported by ACMC and SCMC have been mixed. On the other hand, researchers have found that in CMC, students use simple sentences more frequently than complex ones (Chun, 1994; Kern, 1995). On the other hand, Warschauer (1996) observed language of higher syntax complexity and lexical range. Despite these contradictory findings, the majority of researchers confirm the positive contributions of CMC to the process of language learning (Liu, Moor, Graham, & Lee, 2002).

Based on their research, Beauvois (1994) and Kelm (1992) report less frequent code switching (altering the languages used in the communication process). Kelm (1992) also noticed that students' accuracy in the target language increased with synchronous communication. Ortega (1997) suggests that in a computer-mediated environment, students produce greater amount of language and communicate using longer sentences. In their study of adult German language learners, St. John and Cash (1995), who analyzed the learning process that took place in a six-month e-mail interaction of language learners with native speakers, found increase in learners' motivation to study and use new vocabulary and structures.

Another important characteristic of computer-mediated communication is that it provides an advantage for language learners. More specifically, CMC gives the opportunity to participants of the communication act to go back and review their

communications (Beauvois, 1997; Warschauer, 1999, 2004b). It could be concluded that CMC creates an environment that allows learning the language, learning about the language, and learning through the language.

CMC: Synchronous vs. Asynchronous

In the contemporary L2 classroom, the positive role of CMC is recognized; however, in order to support L2 educators in the process of implementing CMC into their classroom, it is important to consider the specifics of the two different modes – synchronous and asynchronous. Researchers found that both modes provide benefits to foreign and second language learners (Beauvois, 1994, 1997; Kern, 1995; Warschauer, 1999). Sotillo (2000) points out that qualitative and quantitative differences between the language outcomes of the two modes exist. These differences should be taken into account when planning to incorporate CMC into the curricula so the CMC activities correspond with the overall goals of the curriculum as well as with the objectives of the specific instruction activities.

SCMC interaction is highly dynamic and student controlled. This nature of synchronous interaction supports the development of student-centered environment and active meaning negotiation (Sotillo, 2000). Further, CMC provides the learners with opportunities to participate in a communicative exchange in the target language that is at their level of language proficiency, in other words CMC supports the delivery 'comprehensible input', and production of 'comprehensible output' (Swain, 1985). The intense social interaction, textual meaning construction and negotiation in synchronous discussion are crucial for learning and development of higher-order cognitive functions and support the establishment of communities of learners.

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Sotillo (2000) found that asynchronous interaction offers similar advantages. In this mode of CMC, students were mainly answering teacher's and other students' questions, clarifying their points of view, and challenging each other's opinions. The delay of the interaction changes its nature, making this interaction more like the dynamics of face-to-face classroom interaction settings. However, one should be cautious making such generalizations about the nature of CMC since the types of communicational tasks performed can significantly alter the nature of communication (Blake, 2000).

The mode of CMC also affects the functional use of language (Sotillo, 2000). The fast pace of the synchronous interaction makes it more similar to communication in informal oral acts, producing shorter electronic utterances. Sotillo (2000) reports evidences of error self-correction and peer correction in this mode of interaction. Asynchronous interactions lead to more syntactically complex language output through the use of subordinate clauses and longer sentences that are an indicator of active cognitive processes involved in text construction. This language production could be the result of a number of factors such as having more time to construct the message, considering the audience expectations, and the nature of performed tasks. Including challenging tasks, asking students to post carefully prepared responses would encourage them to think critically and focus on both meaning and form to a greater extent than happens during synchronous computer-mediated communication interactions.

Summary

The research literature suggests that in order to understand students' writing and design better instructional strategies, writing should be approached as a process situated into a social context (Grabe & Kaplan, 1996; Kent, 1999, Matsuda, 2003). In addition, it

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should be taken into account that textual level writing features contribute to this understanding (Grabe & Kaplan, 1996; Snellings, van Gelderen, & Glopper, 2002). Accounting for the social nature of writing allows for the recognition of the communication events that occur among learners and between learners and the instructor and their impact on text construction. It is essential to note that the communication events differ in various discourses such as oral, written, and CMC (Swaffar, 1998; Warschauer, 1999). In the contemporary SLA research, it has been concluded that closer studies of CMC tasks and activities are important in order to assure effective inclusion of this unique communication environments in the L2 educational settings (Blake, 2000). Further, while interactions during the revising and editing stages of the writing process have been in the focus of writing research for more than a decade now (Ferris, 2003; Grabe & Kaplan, 1996; Hyland & Hyland, 2006a), research that would shed lights on the first two stages of the process, pre-writing and drafting, is limited. In order to address the new trends in the writing research and the existing gap in the literature, the research project presented in this dissertation aims to investigate the specifics and dynamics of these stages of the writing process within the context of computer-mediated interaction.

CHAPTER III: METHOD

This chapter presents the design of the current research study justifying the basis for making the overall and the specific design decisions. The methodological design is discussed with respect to the researcher's ontological and epistemological beliefs, the nature of the research questions, settings, and data addressed. The chapter also describes the participants, outlines the instruments used for data collection, the process of data collection, as well as the data management procedures applied. Further, a description of the data analysis procedures employed is provided.

Overview of the Study Design

This study is guided by the following overarching research question: How can computer-mediated communication influence the writing skills development of English as a second language adult learners? In order to answer this question, a mixed method study was conducted (Onwuegbuzie, 2003; Teddlie & Tashakkori &, 1998, 2003). It aimed at investigating how a two-way communicative pre-writing task performed via asynchronous and synchronous computer-mediated communication supported adult intermediate level ESL learners' writing process at the pre-writing and first draft writing stages. The study also examined the factors that influenced CMC interactions, students' perceptions of CMC, CMC modes, and the two-way communication task performed during synchronous and asynchronous computer-mediated interactions.

During the process of investigation in the current study, data were collected and analyzed in two stages: qualitative and quantitative. The qualitative stage consisted of

two sub-stages, namely a case study of the entire group of the intermediate English language learners enrolled in the targeted IEP and a collection of eight instrumental case-studies. The qualitative findings were complemented by the quantitative findings; thereby allowing for comprehensive understanding of the phenomenon under investigation. This design, as presented graphically in Figure 1.1, can be defined as a parallel component mixed method design with an ongoing dominant exploratory qualitative stage and nested less-dominant quantitative stage of an experimental design (Caracelli & Greene, 1993; Teddlie & Tashakkori, 2003).

The specific educational setting, the research paradigm, and the data collection and analysis methods were chosen based on the researcher's theoretical orientation, philosophical beliefs, and the research questions of the current study (Seliger & Shohamy, 1989). Thus, two focal issues were considered in the design. The first one was the research focus specified prior to conducting the study and the research questions formulated based on this theory. The second issue was how the research could be conducted in a way that was consistent with the researcher's beliefs.

When considering the first issue, it is important to state that the dominant qualitative stage extended through multiple case studies was guided by a research orientation, which allowed formulating the research questions, focusing the inquiry, determining the type of data collected, as well as determining the specific steps for data collection and the applied data analysis strategies (Yin, 2003). The steps for data collection and analysis flow are presented in Figure 3.1. In this figure, the graphical representation of a multiple-stage study flow used by Yin (2003, p. 50) has been adapted.

Figure 3.1

Research Flow
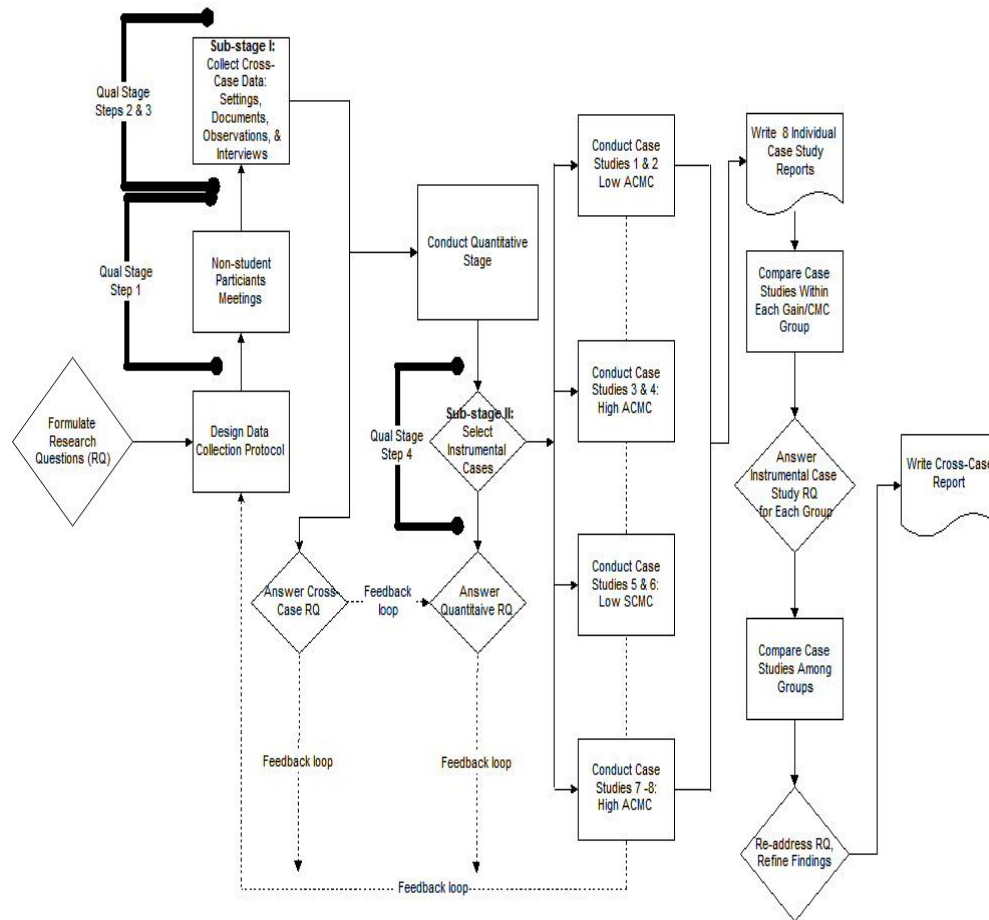
The overarching research question guided this multiple-stage study developed within the framework of Writing-as-a-Process approach discussed in detail in Chapter II. The researcher proposed that the quantitative analysis of first drafts and the group case qualitative analysis pertaining to the whole setting and extended with eight instrumental case studies would show how CMC supported the writing development of ESL adult learners at pre-writing and first paragraph writing stages. More specifically, the researcher proposed that the quantitative analysis of first drafts would reveal how some of the key text features were influenced by the CMC pre-writing exchange. Further, in the

qualitative stage, a case study of the whole group of intermediate level ESL learners

enrolled in the IEP was extended through the instrumental case studies. The goal of this

stage was to show how the CMC pre-writing exchange, students' in-class interaction, and

background were related to students' writing development.

In the context of the second issue considered in the process of study design,

namely how the research could be conducted in a way that was consistent with the

researcher's beliefs, it is important to discuss these beliefs. The ontological views of the

researcher follow Dewey's (1964) view on the commonality, yet nonobjectivity, of the

world that is constructed of multiple subjective realities (Dewey, 1964; Maxcy, 2003).

The researcher also believes that studying interactions in a social context supports the

understanding of the multiple subjective realities and reaching agreement on them. These

beliefs directed the researcher towards applying a combination of design approaches that

would reveal a kaleidoscopic picture of the studied phenomenon and elucidate its various

aspects. Thus, the paradigm that supported the researcher in the process of addressing the

overarching question in a way consistent with the researcher's belief system was the

pragmatist paradigm. This paradigm guides research to the application of mixed method

studies through a planned and justified combination of quantitative and qualitative

methodologies allowing for a better understanding of the studied phenomenon (Maxcy,

2003).

Quantitative Stage Design Overview

The quantitative stage of the study focused on measuring students' writing

performance after completing a communicative two-way pre-writing task, as described

and validated by Pica et al. (1993) via CMC (synchronous versus asynchronous modes).

Specifically this stage investigated the influences of pre-writing task CMC mode on the quality of ESL writing as measured by assessing: (a) the syntactic complexity (measured by calculating the mean length of T-units), (b) the amount of information present in a single focus (measured by mean length of idea units), (c) the quantity of overall information present (measured by the number of idea units), (d) lexical information per clause (measured through lexical density analysis), (e) vocabulary complexity (measured by analyzing the frequency of the unique words used), (f) and overall quality of writing using multiple trait rubric accounting for rhetorical soundness, presentation and development of main ideas, and overall language use.

In this stage, the following research question was posed: How does the CMC mode (synchronous vs. asynchronous) used for the completion of a communicative two-way pre-writing task influence the quality of ESL intermediate level students' writing? This research question was answered through analyzing students' first drafts of paragraph writings, assessing the criteria discussed above, and answering the following specific questions:

Research Question 1: What is the difference in the syntactic complexity present in the post-treatment paragraphs of the students who participated in the synchronous versus asynchronous CMC pre-writing discussion?

Research Question 2: What is the difference in the amount of information present within a single focus of the post-treatment paragraphs of students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 3: What is the difference in the quantity of the overall information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 4: What is the difference in the lexical information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 5: What is the difference in the vocabulary complexity present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 6: What is the difference in the rhetorical soundness present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 7: What is the difference in the presentation and development of the main point and its support present in the post-treatment paragraphs of students who participated in synchronous versus asynchronous CMC pre-writing discussion?

Research Question 8: What is the difference in the overall language use present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?

The study was conducted over the course of two semesters with a total of 60 participants. The quantitative stage took place during Weeks 5 and 6 of each the semester. In this stage, the students prepared for writing a paragraph by completing pre-writing activities, namely brainstorming and planning, preformed in randomly assigned dyads, these activities were performed in a face-to-face environment. Immediately after

this pre-writing session, they wrote their paragraphs (referred henceforth as pre-treatment paragraph) using computers. Then, each dyad was randomly assigned to two treatment groups: asynchronous computer-mediated communication (ACMC) group or synchronous computer-mediated communication (SCMC) group. The ACMC dyads used asynchronous computer-mediated communication, while the SCMC dyads used synchronous computer-mediated communication to perform a communication task (referred henceforth as a treatment task). This task aimed at preparing the participants for writing their post-treatment paragraphs. After the task was performed, each student wrote individually the post-treatment paragraph. The quality of their pre-treatment and post-treatment writings was assessed based on the criteria described further in this chapter.

Qualitative Stage Design Overview

In the on-going qualitative stage, the researcher aimed to explore the processes under investigation for the overall group of participants in the study and then focus on extreme cases identified in this group. Thus, the design of this stage was exploratory (Yin, 2003). The qualitative stage of the study consisted of two sub-stages: the first one followed a group case study design (Miles & Huberman, 1994) that presented the whole group of participants in the context of the learning and communication environment and then addressed specific variables. The goal of this stage was to identify and analyze processes and their outcomes within a group of language learners accounting for specific language learning conditions in which the language learning occurs; thus, a community of practice was in the focus of this group case study (Miles & Huberman, 1994).

The qualitative stage was further extended through a second sub-stage: eight individual case studies were conducted that allowed focusing on extreme cases identified

within the group. The instrumental case study methodology was used to build the eight individual case studies with unit of analysis being intermediate ESL adult learners who demonstrated the highest and the lowest gains in their writing after participating in a CMC pre-writing task. After building each individual case, the cases were cross-examined. Stake's (1995) definition of instrumental case study was adopted. He describes an instrumental case study as a study that examines a particular case aiming to provide an understanding of an issue or to refine a theory; thus, the case itself facilitated the understanding of the studied phenomenon (Stake, 1995).

Qualitative Sub-stage I: The Group Case Study

The participants in the group case study were the 60 students who took part in the quantitative stage. This stage of the study aimed to investigate a group of purposefully selected participants (Hatch, 2002; Kemper, Stringfield, & Teddlie, 2003) within the context of the studied phenomena. The data were analyzed in order to reveal the overall group participation in the writing class with focus on their performance during the completion of a computer-assisted pre-writing activity. In this stage, the following variables related to the studied phenomena were considered: (a) the descriptive characteristics of the CMC pre-writing discussions performed by the participants; (b) the patterns of dyadic interactions used by the participants in CMC environments; (c) participants' views about writing; and (d) participants' views on the pre-writing task as performed in a CMC environment. They were presented within the context of the learning environment.

Multiple data sources were used in this stage. Observations and debriefing with the non-student participants were conducted to collect data related to class organization,

dynamics, management, and working with software. The CMC logs produced during the pre-writing task were used in order to address the descriptive characteristics of the pre-writing discussion. The patterns of dyadic interactions during the CMC discussions were identified applying the model of dyadic interaction proposed by Storch (2002). Finally, using a combination of the standardized open-ended interview approach (Patton, 2002), the participants' views about writing and the pre-writing task as performed in a CMC environment were elicited.

The leading research question addressed was: How do dyadic interactions, performed via asynchronous computer-mediated communication (ACMC) and synchronous computer-mediated communication (SCMC) pre-writing task, and students' views on CMC and writing influence writing development of adult intermediate level ESL learners? Three specific research questions helped to guide this analysis. *Research Question 1:* What are the students' perceptions of the role of CMC in the process of establishing their writing skills? *Research question 2:* What patterns of dyadic interaction do participants manifest during the asynchronous and synchronous CMC interaction process? *Research Question 3:* What are the factors that influence the CMC pre-writing interaction process? How do these factors influence the interaction process? The goal of this stage was to provide a better understanding of the studied group of learners and the learning environment within the context of the studied phenomena which facilitated the following instrumental case-studies.

Qualitative Sub-stage II: The Instrumental Case Studies

In the instrumental case study stage, the researcher identified eight participants who demonstrated the highest and lowest gains in their writings after performing the

CMC pre-writing task. Each case was studied individually and then the cases were cross-examined. The analysis of the cases and their comparison aimed to disclose (a) the factors that influenced the CMC pre-writing interaction process for each participant and across participants; (b) the patterns of dyadic interaction that the actor of each case manifested during the asynchronous or synchronous CMC interaction process and how these patterns were affected by the factors that influenced the CMC interaction; (c) the actors' perceptions of the role of CMC in general and for the establishing of the writing skills in particular; (d) the ways in which the actors used the specific language constructs and ideas produced during the asynchronous or synchronous CMC interactions in their writings.

These comparisons were viewed as instrumental to explain (1) how ESL students of intermediate level proficiency who had the highest and the lowest gains in their post-treatment writings participated in the communication activity performed via CMC, and (2) how they applied the results of the peer CMC interaction in their writing. In order to understand this complex process, data collected during on-going in-class observations, the pre-treatment and post-treatment writing samples, and CMC logs were analyzed. Further, students' perceptions of the CMC modes and the communicative task elicited during interviews were considered. The research questions addressed through these case-studies were: *Research Question 1:* How do peers participate in asynchronous and synchronous pre-writing CMC interactions? *Research Question 2:* (a) How do they use the specific ideas and language generated during these interactions in their writings? (b) What are the differences and similarities in the implementation of these ideas?

The setting in which the study was conducted was perceived to be naturalistic – the ESL classroom. Although every effort was made to collect the quantitative data in a controlled manner, this control was not transparent to the participants, and the overall quantitative data collection process did not differ significantly from the usual classroom practices. The qualitative data were interpreted in the context of students' backgrounds and overall class participation and were linked to the results of the quantitative stage of the study in order to approach the process holistically. Figure 3.2 represents the data collection schedule of qualitative and quantitative stages of the study.

Figure 3.2

Research Stages and Steps

Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14
qant					*Pre-treatment writing; *Assigning ACMC and SCMC groups; *ACMC homework (due the beginning of week 6)	*SCMC task; *Post-treatment writing.								

			Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Step 1 – Non-Student Participants Meetings	Observations and	Interview						**Step 2**							**Step 3**		

Observations of the language learning setting

CMC logs and writing: data collection

CMC Interviews: Participants -- all students

Step 4

Post-data collection

QUAL stage extension: Eight instrumental case studies

Pilot Study

The researcher conducted a pilot study in the Fall semester of 2004. The goal of the pilot study was to validate the scores obtained by the multiple-trait rubric used in the current study and described further in this chapter, as well as to facilitate the design process of the interview questions and data collection procedures. Another important objective of the pilot study was to ensure that the interface of the CMC applications used for the treatment dyad collaboration allowed for smooth navigation and flow of the CMC interactions between dyads of participants.

The software applications that were used for collecting ACMC and SCMC data during the qualitative and quantitative stages of the study, namely Internet Classroom Assistant, version 2(ICA2) and Language Education Chat System (L.E.C.S), were tested during the pilot study. The Internet Classroom Assistant is an online application that allows asynchronous conferencing, document posting, and link sharing, Figure 3.3 presents the ICA2 class home page (Nicenet, 1998).

Figure 3.3

ICA2
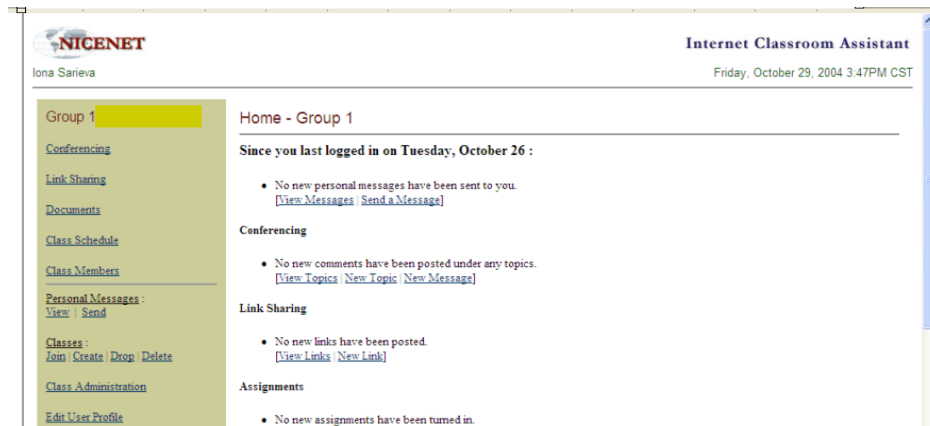
The application used for the SCMC interaction and data collection is Language

Education Chat System (L.E.C.S): a free web based synchronous conferencing software

designed especially for language teachers and learners. Figure 3.4 presents a chat session

entry screen of this application (Kanto Gakuin School Corporation, Japan, n.d.).

Figure 3.4

Language Education Chat System (L.E.C.S.)

During the pilot study, it was confirmed that students' interactions had not been interrupted by technical and navigational difficulties. Furthermore, it was concluded that in-class and homework activities conducted prior the treatment had been beneficial in terms of establishing the necessary computer skills that would assure the productive use of the applications. Both applications are discussed in more detail later in this chapter.

Settings, Participants, and Sampling Procedures

Study Context

The ESL Program

The overall sampling technique used to select the IEP among the numerous programs existing in the United States was purposeful sampling (Hatch, 2002; Kemper, Stringfield, & Teddlie, 2003) which aimed to study language learning processes within contexts common for IEP settings in the United States. The researcher decided to collect data at this setting based on the fact that the targeted program passed the Commission on English Language Program Accreditation review. This accreditation assured the researcher that the language learning context of the program was common to other accredited IEPs in the country and that in the program similar enrollment and proficiency level assessment procedures were utilized.

A careful study of the enrollment and level placing procedures employed at the targeted IEP as well as its teaching practices and the philosophy confirmed that the sample drawn from this program was representative to a significant extent to the overall IEP population in the USA. Thus, the participants in this study were chosen among the students of this IEP. They were intermediate adult ESL students who spoke various

native languages, had different cultural backgrounds, and were enrolled in an IEP offered at a large urban area university in the southeastern part of the United States.

As outlined in the mission statement of the targeted IEP, the teaching and learning practices encouraged and implemented in this language school aspired to prepare its English language learners for successful participation in the U.S. academic environment and support them in the process of their professional development (ELI @ USF, 2002). The continuous professional growth of the instructors was supported by the IEP administrators through organizing professional discussion forums and workshops, providing a CALL support during the semester by a specially hired CALL consultant, as well as through providing connections and opportunities for active scholarly partnership with the university graduate programs in Second Language Acquisition and Instructional Design and Applied Linguistics. The curriculum designers and instructors at the IEP were well informed about the development of the current trends in SLA and applied modern teaching approaches including a carefully planned implementation of a computer-assisted language-learning curriculum for all proficiency levels. This curriculum aimed to develop computer literacy skills, as discussed in Chapter II, that involve effective use of computer accessible media for language learning, research, and communication. In addition, the goals of the writing course targeted in this study were formulated within the framework of Writing-as-a-process approach, which was the guiding theory for the current study. For the full text of the Intermediate Academic Writing course goals see Appendix 1 A.

The program required the ESL students to be enrolled on a full-time basis receiving 25 hours of weekly instruction during a 14-week semester or to be part-time

students with a minimum of 10 hours of weekly instruction during a 14-week period. In addition, there was a second enrollment after mid-terms (Week 7 of the semester). The students who took classes on a part-time basis with less than 15 hours of weekly instruction or were admitted during this second enrollment were not included in the study.

Another requirement at the IEP was the strict placement testing administrated at the beginning of each semester. A combination of two placement tests was used: (a) Listening and Grammar sections of the Comprehensive English Language Test (CELT) (Canadian Test Centre Inc., 2003) and (b) Vocabulary and Reading Comprehension sections of the Michigan Test of English Language Proficiency (MTELP) (The University of Michigan, English Language Institute, Testing Certification Division, 2003). For more details on CELT and MELTP see Appendix 1 B and Appendix 1 C. At the beginning of each semester, after the proficiency levels of the students had been identified, they were assigned to the corresponding proficiency level sections by the program administrators. The only criteria used in this assignment were students' native language and gender. The goal of applying these criteria was to assure native language and gender diversity in each section. In order to assure quality instruction the IEP administration limited the section size to a maximum of 18 students.

Each intermediate level group participated daily in the following classes: Listening/Speaking and Pronunciation, Academic Writing, Grammar, Cultural Contacts with a focus on reading, and Test Preparation Electives: the Test of English as a Foreign Language (TOEFL), Scholastic Aptitude Test (SAT), Graduate Record Examination (GRE), or Graduate Management Admission Test (GMAT). Furthermore, the classes of a

particular proficiency level followed the same syllabi and used the same textbooks, although different instructors would usually teach the level sections. The instructor meetings for each level were conducted on a regular basis during the semester to assure frequent instructor communication. In addition, the instructors of the same class in each level coordinated their instruction throughout the semester to assure that the same or similar topics were taught. Last, but not least, the IEP was designed as a research laboratory for graduate students involved in language acquisition related programs, and the administrators were not only willing to support research studies but also had the required expertise.

Initially, a second IEP was considered for the study; however, this consideration was abandoned because of the concern that the differences in the curricula, course syllabi, and textbooks may negatively affect the results. That is, it was assumed that the use of a second IEP would threaten the validity of the findings via differential selection of participants (Onwuegbuzie, 2003). The administrative support and expertise, the identical and strict placement of students into proficiency levels and the instructional procedures applied increased the internal validity of the quantitative findings as well as the credibility and transferability of the interpretations pertaining to the collected qualitative data. Instead, in order to obtain a sample whose size would allow the application of inferential statistical analysis, the researcher decided to collect data in two consecutive semesters at the same IEP. This data collection strategy was perceived to pose less threat to the validity of the findings by diminishing the threat of differential selection of participants.

The Writing Class

The writing class at the target IEP was titled Academic Writing. During both semesters in which the data collection was performed, the class was taught for a total of five hours a week, consisting of three single sessions and one double session, four days a week. During both semesters, the students spent two of these class sessions in the computer laboratory working on assignments that were part of the writing class. The instructors were educators who held their Master of Arts degree in the field of Applied Linguistics. In addition to the strong linguistic and language teaching background, the instructors' expertise in CALL, although diverse, was developed and kept current through participation in in-service workshops and conference participation.

The textbook used in the writing class during both semesters was *Writing to Communicate,* written by Boardman and Frydenberg (2002). The authors of the book designed it as a guide through a recursive non-linear writing process that uses the principles of scaffolding. This choice of textbook revealed the intentions of the writing curriculum designer to promote a writing course that would carefully guide learners and encourage active collaboration throughout the writing process. The researcher has been a part of this ESL community for several years, she also systematically observed the writing classes during the data collection period (the entire Fall 2005 and Spring 2006 semesters); her experiences showed that the above intentions, were shared and implemented by the instructors of the writing course. During the Fall 2005 semester, the intermediate level had two sections instructed by the same teacher. During the Spring 2006 semester, there were four sections of Level III with four different instructors. The instructors were required to use the same textbook but were given the freedom to create

their own supplemental activities, assignments, and assessments throughout the semester; the only compulsory assessment was the final examination administered at the end of the semester. However, as it was mentioned earlier, the tradition at this IEP was for the instructors of the level sections to communicate with each other throughout the semester, sharing ideas, activities, and assessment tools. The weekly level meetings held on a regular basis throughout the semester further supported this communication. Furthermore, in order to facilitate the data collection process, during the Spring 2006 semester, the four writing instructors made extra efforts to unify the timing and sequence of topics introduced in the different writing sections of Level III writing class.

Activities that incorporated CMC had been part of the learning process at this institution for several years. These activities took place during the computer laboratory sessions and were assigned as homework. During the Fall 2005 and Spring 2006 semester, all writing instructors used ICA2 for their writing classes to organize material and communicate with their students. During the pre-treatment period, the researcher supported the instructors' efforts to introduce a variety of activities using ICA2. Although L.E.C.S. was a less-frequently used application, the writing instructor in the Fall 2005 semester was familiar with it and successfully implemented chat activities using the application. Prior to the treatment, three out of the four Spring 2006 writing instructors were not familiar with L.E.C.S. and two had limited exposure to and use of ICA2 which required individual training sessions, conducted by the researcher at the beginning of the semester. During both semesters, the researcher actively supported and participated in the design and implementation of the pre-treatment CMC activities that aimed to build students' computer and computer-mediated communication skills.

While designing the current study and during the data collection process, the researcher carefully studied the practices and the materials used in the writing course offered in the targeted IEP and implemented by the instructors during both semester of data collection. The researcher concluded that the instructional practices as well as the texts used in the course were consistent with the Writing-as-a-process approach theory informing the study. It was also concluded that these practices were considerably unified across the two semesters in which data were collected as well as across the different Level III writing sections. The learning and teaching practices and environment described allowed for collection of data without destruction of the naturalistic educational setting; in other words, the data were collected without imposing practices such as collaboration, scaffolding, writing of multiple drafts, and CMC, because they were a natural part of the learning process.

Participants

The participants in the qualitative and the quantitative stage of the study were 60 adult students who were enrolled in an intensive ESL program affiliated with a southeastern American university during the Fall semester of 2005 and the Spring semester of 2006. Although the total number of Level III students in the Fall 2005 and Spring 2006 semesters combined was 103, only the students who participated in dyads with a full set of treatment activities completed were considered as participants in the study and their writings and CMC discussion data were analyzed; in other words, both members of the dyad had to have the pre-treatment discussion and writing, the treatment and the post-treatment writing completed. The majority of the participants (59) were full-time ESL students who had 25 hours of weekly instruction; there was one part-time

student who had 15 hours of weekly instruction. There were 24 female (40%) and 36 (60%) male students. The average age of the participants was 25.55. The youngest participant was 17 years old, whereas the oldest was 46. They came from 21 countries and spoke 13 native languages. All of the new coming students had an intermediate level of language proficiency, as measured by CELT and MTELP in the beginning of the semester. The students who were with the IEP during the previous semester and successfully completed Level II were not tested for proficiency in the beginning of the semester.

Considering the fact that the program was similar to other IEP programs in the US and was following common registration procedures, this sample may be viewed to be representative of the university IEP population in the US. Nevertheless, it should be taken into account that these students may not encompass the whole variety of different nations and cultural backgrounds represented in the IEP population in the United States and other countries where ESL instruction is offered, which posed a threat to population and ecological validity of the quantitative findings of the study.

All students participated in the initial phases of the qualitative stage (prior to qualitative data collection and analysis). They were observed during their face-to-face classroom interactions and weekly computer laboratory classes, and were interviewed as well. After the quantitative data were collected and analyzed, the researcher focused on eight participants chosen for the instrumental case studies.

These participants were chosen based on their gains in the quality of their post-treatment writings as compared to the pre-treatment writings. These gains were measured based on the difference of the pulled z-scores of the eight measures used for the

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paragraph analysis of the pre-treatment paragraph and the post-treatment paragraph. These participants are presented in Chapter V.

The non-student participants in the qualitative stage of the study included the researcher who was also the CALL consultant at the IEP for the Fall semester of 2005, the writing instructors, and curriculum coordinator at the IEP. All of them had a master degree in the field of Applied Linguistics, foreign and second language teaching and had considerable (more than 5 years) experience in teaching ESL. All of them except for the researcher were native speakers of English.

Sampling Techniques

Quantitative Stage Sampling Techniques

The sampling technique applied in the quantitative stage of the study were purposive homogeneous sampling (Hatch, 2002; Kemper et al., 2003). The goal was to choose ESL learners of a specific level of proficiency. During the Fall semester of 2005 and the Spring semester of 2006, 103 students were enrolled at the target proficiency level; however, only 60, for whom a full data set was obtained, as specified earlier in this chapter, were selected as participants in the study.

The Group Case Study Sampling Techniques

Similarly to the quantitative stage of the study, for the group case stage, the participants were selected using purposive homogeneous sampling (Hatch, 2002; Kemper et al., 2003). The students who participated in the quantitative stage were the participants of the group case stage of the study. These were students who were enrolled in two consecutive semesters in the Intermediate level writing class at the targeted IEP.

The Instrumental Case study Sampling Techniques

The sampling technique used in the instrumental case study stage was purposive sampling involving an Extreme/Deviant sampling technique. The researcher decided to apply this purposive technique because it allowed for identification of the most outstanding cases based on writing gains as a result of the treatment (Kemper et.al., 2003); these cases were used for the creation of multiple case studies that were then compared. Following Yin's (2003) view, the researcher believes that describing, analyzing, and comparing a collection of cases rather than one or two separate cases would reveal better the processes under investigation.

The participants in the instrumental case study stage were eight students selected from the overall group of participants. Four students from each CMC mode group participated in the qualitative stage of the study. This selection was based on their writing gain scores and CMC group participation. The gain was identified based on the difference of the pulled z-scores of the eight measures used for the paragraph analysis of the pre-treatment paragraph, completed after a face-to-face pre-writing discussion, and the post-treatment paragraph, completed after the CMC pre-writing discussion. Thus, the low-gain participants were the two students from the ACMC and two students from the SCMC group who obtained the lowest pulled z-score difference. Their high-gain counterparts were the two students from the ACMC and two students from the SCMC group who obtained the highest pulled z-score difference.

The Non-student Participants

The non-student participants in the study were chosen via application of purposive criterion sampling (Patton, 2002). The criteria were either for those

participants to be involved in the instruction process of the student participant and/or to be involved in the curricula design and development of the IEP. The researcher believes that these participants, chosen using the predetermined criteria stated above, contributed to the qualitative data collection process.

Protecting Participants' Rights and Privacy

During the study, the required Institutional Review Board procedures were followed. In order to participate, all students of the Intermediate (Level III) writing classes were informed about the nature of the study. They were asked to sign an informed consent form indicating their agreement or disagreement to participate in the study. They also were notified that they can discontinue their participation in the study at any point. It was explained to the students that if they decided to discontinue their participation or if they decided not to participate at all in the study, this would not free them from completing the communicative and writing tasks because they were be part of their overall writing class activities. The students also were informed that their privacy would be protected: it was explained to them that their real names were to be kept confidential and when data would be analyzed and discussed, codes rather than students' names would be used. Alphanumerical codes were assigned to each of the quantitative stage participants after the data were collected. These codes replaced the names of the students and were used in all tables presenting the data. Further, during the analysis and the presentation of the qualitative data pseudonyms were assigned. The researcher used names that were typical for the native culture and country of the participants.

Researcher's Role in the Study

In this study, the researcher played multiple roles; these roles were defined by various factors such as stage specifics as well as the researcher's professional, language, and educational background. During the Academic Writing curricula revision and course syllabus creation process, the researcher collaborated with the non-student participants in order to ensure that the CMC training and treatment tasks as well as the topics of the pre- and post-treatment paragraphs were consistent with the intermediate-level Academic Writing course and were compatible with the overall goals of the course. This allowed for preservation of the naturalistic character of the setting. The researcher introduced the instructors to the writing measurement instruments, namely the multiple-trait rubric, and trained them how to use the rubric. In addition, as mentioned earlier in this chapter, the instructors who had limited familiarity with ICA2 and L.E.C.S. were trained how to work with these applications.

Further, prior to the quantitative stage, the researcher discussed with the instructors the design of the in-class brainstorming sessions for the pre-treatment paragraph writing. In order to ensure that the instructors follow similar procedures, the researcher observed these in-class sessions and took notes that supported the qualitative data collection, analysis, and interpretation. In the Spring semester of 2006, one of the pre-treatment and one of the treatment sessions were observed by a trained research assistant because two of the four sections of Level III had their classes in two different computer laboratories simultaneously. Along with the IEP instructors, the researcher scored the pre-treatment and post-treatment first drafts; however, only the instructors provided feedback to the students for further improvement of their post-treatment drafts.

The researcher was an active participant and observer during the whole semester. During the pre-treatment period, she observed and assisted activities that aimed to train the students how to work with ICA2 and L.E.C.S., she also assured that the training activities were similar and/or identical across the two semesters and the six sections of Level III Academic Writing class.

The pragmatist paradigm recognizes the role that the researcher's values and beliefs play in data collection and interpretation of results. Further, the complexity of the researcher's role in a qualitative case study is influenced by the fact that the researcher is personally involved in the processes under investigation and consequently becomes the key measuring instrument (Gall, Borg, & Gall, 1996; Patton, 2002). Thus, it is important to state the researcher's background relevant to the study.

The researcher is a native speaker of Bulgarian and Russian. She was raised in Bulgaria and acquired her second native language – Russian first in home settings and later, starting at age of 10, in immersion educational settings. She learned English in her early twenties in predominantly academic settings. She holds a Master's degree in Russian Culture and Linguistics, as well as a graduate certificate in Teaching English as a Foreign Language, and currently is pursuing her doctoral degree in Second Language Acquisition and Instructional Technology. During the study design period and the first semester of data collection, she was the CALL consultant in the IEP where the study was conducted and was involved in teacher training and instructional support related to TESOL, ESL, and CALL. Her personal beliefs as an educator and researcher encompass supporting classroom practices that encourage creating communities of learners,

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providing authentic opportunities for language learning, and promoting the development of new literacy skills.

Research Procedures

This study utilized a parallel component mixed method design. There were two stages utilized, namely: an on-going dominant qualitative stage and nested less dominant quantitative stage sequential mixed method design (Caracelli & Greene, 1993; Teddlie & Tashakkori, 2003). The research was conducted with students who were intermediate-level ESL learners at the targeted program.

Qualitative Stage Procedures

In the on-going qualitative stage of the study, four steps were undertaken. The steps were identical during both semesters of data collection. In these steps, the researcher aimed to collect data presenting the specifics of the learning environment, participants' backgrounds, as well as their interactions, behaviors, attitudes towards writing, and opinions about the treatment pre-writing task. Following is a detailed description of the procedures that were applied in each step. For a graphical presentation of each step within the Qualitative stage schedule, refer to Figure 3.2.

Qualitative Stage, Step 1: Prior the beginning of the semester, the researcher had informal meetings with the non-student participants of the study, namely: the writing class instructors and the curriculum designer at the IEP. The topics discussed during these meetings concerned: (a) the overall instructional and assessment procedures planned for the semester; (b) the educational goals set for the semester; and (c) the CALL approaches planned in connection with the integrated CALL curricula and how they were situated within the overall learning process. The outcomes of these informal interviews

were documented. The data collected during these sessions were used when describing the overall research setting.

During these sessions, the researcher informed the non-student participants about the study goals and procedures. The researcher confirmed that the procedures planned were consistent with the educational practices at the IEP, and that they could be applied in accordance with the research plan. The researcher and the non-student participants compared the writing class syllabi and research project plans and schedules in order to confirm that the research procedures were applicable and would not disturb the planned instructional and learning process. During this step, the familiarity of the writing instructors with the proposed CMC software was discussed and additional support was provided to the instructors who were less familiar with the CMC applications.

Qualitative Stage, Step 2: This step started prior to the quantitative stage and continued after this stage was completed. Starting from the first week of classes, the researcher observed the intermediate level writing classes. She took the role of a participant observer who assisted the instructor during class activities and participated in these activities. On a regular basis, the researcher held a short informal debriefing sessions with the instructors, in order to verify and clarify (if necessary) the observations. These debriefing sessions with the non-student participants were viewed as an important element of the data collection that provided opportunities for verification and deeper understanding of the processes observed in the classroom.

The field notes were transcribed immediately after each session and were transformed into a narrative that described the class session. These narratives allowed for achieving a more complete description of the setting and participants' behaviors and were

based both on the raw field notes and on what the researcher remembered (Hatch, 2002). It is important to note that the researcher participated in and observed selected class sessions focusing on the computer laboratory sessions; however, when the schedule allowed face-to-face sessions were observed as well. Detailed information about the number and type of observed sessions is provided in Chapter IV.

During Step 2, that is, prior to and during the quantitative stage, the students participated in unified activities introducing the use of computers for writing and research purposes following the CALL curricula guidelines and objectives. The outline of the CALL curricula objectives is available in Appendix 2. The participants were introduced to the applications used for ACMC and SCMC, namely ICA2 and L.E.C.S., and performed various communicative CMC tasks including participation in the first round of the asynchronous interview. This assured participants' familiarity with the interface of the CMC applications (ICA2 and L.E.C.S.) and their exposure to computer-mediated interactions in synchronous and asynchronous environments, thereby, eliminating the novelty effect that could limit student performance during the treatment. These activities were planned by the instructors of each class and coordinated when necessary with the researcher who was also the CALL consultant at the IEP during the first semester in which the data were collected. They are described in detail in Chapter IV.

Another reason for introducing the CMC applications in Step 2, prior to the quantitative stage, was to preserve the naturalistic nature of the educational setting; in other words, to go along with the path that students would follow during their study of English language, as outlined in the CALL integrated curriculum. However, it is important to state that a communication task of the same design as the one that was

performed for the actual data collection was not applied during the pre-quantitative period. This decision was made based on findings in SLA research that reveal that students participating in unfamiliar design tasks tend to demonstrate greater conversational commitment and involvement, whereas task-familiar students demonstrated signs of disinterest that affects the intensity of their communication (Plough & Gass, 1993).

In addition, in Step 2, prior to and during the quantitative stage, the students, following the writing curriculum, were exposed to the specifics and mechanics of descriptive paragraph organization and performed practice exercises. The instructors of the writing classes also introduced the multiple-trait rubrics (Appendix 3A and 3B) that were used for assessment and discussed them with the participants. These preliminary procedures were coordinated with all four instructors participating in the study in order to ensure uniformity of their application.

The decision to start the observations in the beginning of the semester was made based on the following considerations: (a) the prolonged engagement and observation would allow the collection of thick and rich qualitative data (Lincoln & Guba, 1985); (b) the researcher was able to enter the setting in a more natural way at the beginning of the semester before the students knew each other well (Patton, 2002); (c) the drawbacks of the overt (full disclosure) data collection process was minimized by the fact that the students became used to the presence of the researcher in the classroom (Patton, 2002); and (d) the process of building and maintaining trust relationships between the researcher and the participants allowed collecting credible data (Lincoln & Guba, 1985). In addition, the data collection process during the pilot study showed that asynchronous CMC

interviews required more time for question/answer exchange; thus, starting the interviews at the beginning of the semester lowered the burden on the students and allowed for more effective interview process.

Qualitative Stage, Step 3: This step started in the beginning of the semester and continued to its end. Through the whole semester, open-ended CMC interviews were conducted. The interviews were conducted via ICA 2, the courseware used in all six sections of the intermediate level writing class. The total of 18 questions was asked during the interviews. Questions 1-10 elicited information related to participants' background as well as current and past experiences related to writing and CMC. These questions were asked during the weeks preceding the nested quantitative stage. Questions 11-18 addressed opinions, feelings, and experiences related to the studied CMC interactions and the following writing. The actual interview questions are presented in Chapter IV, Table 4.3. The interview design considerations are discussed later in this chapter.

Qualitative Stage, Step 4: This step took place after the data collection was completed. After the quantitative and qualitative data were collected and analyzed, the specific participants in the instrumental case studies were identified. From the overall body of qualitative and quantitative data, the researcher extracted the data related to the selected instrumental case study participants. Initially, the researcher planned for Step 3 and 4 to coincide during the post-quantitative stage of the study. The researcher intended working closely with the students selected to participate in the instrumental case study stage. However, the textual data analysis based on which these participants were selected required more time than anticipated; thus, the instrumental case study participants were

selected after the end of the second semester of data collection. This late identification of the instrumental case study participants posed certain limitations: the researcher was unable to conduct focused observations of these participants and missed the opportunity to elicit more detailed answers related to their participation in the pre-writing activity and writing task completion. However, considering that the focus of the instrumental case studies was on the participants' CMC pre-writing interactions and drafts composed based on these interactions, as well as that the researcher was involved in prolonged participation and observation of the targeted learning community, the researcher believes that the available qualitative data extracted from the instrumental case study participants was sufficient for the planned analysis.

Quantitative Stage Procedures

In this stage of the study, quantitative data were collected and statistically analyzed in order to answer the quantitative research questions. The CMC pre-writing task (treatment) was performed, and data were collected during Weeks 5 and 6 during both semesters. To assure an educational setting that was controlled, the participants underwent the pre-treatment and the post-treatment writing tasks on the same day and in similar computer laboratory environment. During the Spring semester of 2006 an additional laboratory was used at the IEP due to the high enrollment; however, this additional computer laboratory was very similar in terms of organization, settings, and computer availability to the main one.

There were three experimental computer laboratory sessions: (a) pre-treatment discussion and writing session, (b) treatment SCMC discussion session, (c) post-treatment writing session. The ACMC discussion session was assigned as homework due

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to the nature of the asynchronous computer-mediated communication that requires an extended period of time for message exchange. During the three experimental sessions and the homework ACMC session, the students worked in dyads that were randomly assigned within each Level III section. These dyads were also randomly assigned to either the ACMC or SCMC group.

The class schedule of the Fall 2005 writing class was changed, so that the two sections could work together in the computer laboratory during all three experimental computer laboratory sessions, thus assuring that they completed the pre-writing, treatment, and writing assignments under the same conditions. In Spring 2006, no schedule changes were made – during the Weeks 5 and 6 three of the classes experienced the three experimental sessions at the same time but one of the sections completed the task in the additional computer laboratory to which it was assigned from the beginning of the semester. The fourth section completed the experimental computer laboratory sessions one hour later following their regular schedules.

On Thursday of the fifth week of each of the two semesters, the participants gathered in the computer laboratory where they wrote their first drafts of a paragraph. The same prompt was assigned to all participants during both semesters of data collection (Appendix 3A). This writing assignment was completed during a 50-minute class session. The first 20 minutes of the class were devoted to completing a pre-writing task that involved oral brainstorming and planning of the paragraph to be written based on the given prompt. This pre-writing task was performed as a dyad activity. The students were reminded that they could take notes during the discussion but only a few of them actually followed this suggestion. In the remaining 30 minutes, each participant wrote his/her first

draft of the paragraph. At the end of the class, they saved their work on the server and/or a floppy disk and submitted a printed and an electronic copy to their instructor.

After the pre-treatment paragraphs were collected, the students were informed to which group – ACMC or SCMC – their dyad belongs. The ACMC participants received detailed instructions and materials (pictures) needed to perform the treatment decision-making task as a homework activity (the treatment task is presented in Appendix 4). Considering the fact that some of the students did not have computers at home and needed to use the two university computer laboratories to which they had access, the period in which they were allowed to work on the ACMC task was from Thursday afternoon (Week 5) to Tuesday morning (Week 6); this allowed ample time to complete the asynchronous interaction. This interaction aimed to support the participants during the pre-writing stage and helped them in the process of generating ideas and planning the post-treatment paragraph. The SCMC students received a homework reading assignment: they had to read a text and answer questions based on this text. The text and the questions were posted in the participants' writing class space hosted on ICA2. The students were instructed to submit their answers by Tuesday morning of Week 6 via ICA2 (the full text of this additional assignment is presented in Appendix 5).

On Monday of Week 6, a regular writing class session took place. During the Monday session the treatment task was not discussed. On Tuesday (Week 6) all the participants had a double session (100 minutes) in the computer laboratory. During the first 50-minute session, the SCMC dyads participated in a synchronous discussion following the same pre-writing task assigned as homework to the ACMC group. During the same session, the ACMC group performed the reading task via ICA2 assigned as

homework to the SCMC group (Appendix 5). As it was expected, the reading task took approximately 35 minutes. In the time remaining until the end of the class, the ACMC participants who completed the reading task were asked to review their ACMC interactions; however, they were instructed not to post any additional messages.

The post-treatment writing was performed during the second computer laboratory session on Tuesday, Week 6. Each participant wrote his/her first draft of a descriptive paragraph following the post-treatment prompt within a 35-minute period. During their writing, the participants had access to their CMC logs and were encouraged to use them. It was expected that the CMC log reference would take more time compared to recalling of or referring to notes taken during a face-to-face discussion; therefore, the researcher decided to allow an additional five minutes for the post-treatment writing session. At the end of the writing session, each student saved his/her paragraph draft on a floppy disk or the laboratory server and submitted a hard copy to the instructor.

In order to assure that the experimental procedures were followed consistently, the researcher overlooked and assisted all but one Level III writing sections during the three experimental sessions. As stated earlier, in the Spring of 2006, one of the Level III writing sections had its computer laboratory classes in a separate laboratory. The researcher trained an assistant who was familiar with CALL, the computer laboratories, and the IEP to observe and assist the computer laboratory experimental sessions and assure that all of the required procedures and time-lines were followed.

During pre- and post-treatment writing sessions, the students were offered technical assistance in order to ensure that technical problems did not influence the writing outcomes. No frequent or serious problems were observed – at this point of the

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semester, the students' comfort level with Microsoft Word was established and they felt confident when working with L.E.C.S. and ICA2.

The Treatment

The specific pre-writing task that the participants in the current study performed via CMC was a decision-making task as classified by Pica et al. (1993). Prior to performing the task, each participant was given a set of six pictures that aimed to elicit discussion on the following topic: *The People of the United States*. At this stage, the participants also were instructed to brainstorm together the main idea, supporting ideas, and paragraph organization of a descriptive paragraph that each one of them would write individually following the CMC discussion. The full task including the directions and the pictures are presented in Appendix 4.

The topic was chosen considering several factors such as age appropriateness, interest, expected knowledge about US culture and history based on the curricula material covered in the writing class as well as in the other classes prior to the treatment, and the rhetorical features of the expected post-treatment writing outcome – a descriptive paragraph. It was decided to use pictures rather than text in order to assure elicitation of student-produced language and active meaning negotiation during the discussion process.

When given the pictures, the participants were explicitly instructed not to share them with other participants in a regular face-to-face interaction and to discuss them with their partner only via the assigned CMC mode using the respective application. The researcher ensured this behavior during the synchronous discussion session. However, it was impossible to control the participants in the ACMC group in this respect. However,

the later analysis of the ACMC interaction logs did not raise a suspicion that the

paragraph pre-writing discussion took place outside of the CMC environment.

Instrumentation

Quantitative Stage Instrumentation for Text Analysis

The instruments used in the quantitative stage of the study aimed to measure eight

different aspects of the participants' first drafts of paragraph writings that reveal specific

language competencies as demonstrated in a written text: (a) syntactic complexity,

measured through T-unit analysis; (b) the amount of information that the writer attempts

to handle in a single focus, measured through mean length of idea units; (c) quantity of

the overall information that the writer presents, measured through the number of idea

units; (d) lexical information presented by the writer, measured through lexical density;

(e) vocabulary complexity, measured through the ratio of unique word of frequency

groups used in the writing; (f) rhetorical soundness; (g) descriptive presentation; and (h)

overall language use. The last three competencies were assessed with multiple-trait

scoring rubrics. The scores of the pre-treatment and post-treatment writing samples for

both the synchronous and asynchronous groups were calculated and used for statistical

analysis in order to answer the quantitative research questions. Table 3.1 presents a

matrix summarizing the instruments used in the quantitative stage of the study.

Table 3.1

Quantitative Stage Instrumentation

Type of Analysis	Definition of measured item	Writing competency measured	Writing Production Considered	Tools for Analysis
T-unit – mean length (Hunt, 1965)	Main clause including all the subordinate clauses	Syntactic	Both syntactically correct T-units and T-units that are unambiguous, in other words, idea units that have minor grammatical errors.	-The researcher and a trained rater – T-unit identification -Mean length calculation - software

Table 3.1 (Continued)

Quantitative Stage Instrumentation

Type of Analysis	Definition of measured item	Writing competency measured	Writing Production Considered	Tools for Analysis
Idea Unit – mean length (Chafe, 1985)	A single clause containing one verb phrase, along with whatever other phrases (e.g. noun, prepositional phrases), adverbs etc.	How the generated ideas are 'packed' in a single attention focus.	Both syntactically correct idea units and idea units that are unambiguous, in other words, idea units that have minor grammatical errors.	-The researcher and a trained rater – idea-unit identification -Mean length calculation - software

Table 3.1 (Continued)

Quantitative Stage Instrumentation

Type of Analysis	Definition of measured item	Writing competency measured	Writing Production Considered	Tools for Analysis
Lexical Density (Halliday, 1989)	Lexical items as a ratio of a total number of clauses	Lexical information presented by the writer	Only lexical items and clauses that are unambiguous (i.e. grammatically correct or with minor grammatical and/or spelling errors).	-The researcher identification of lexical and grammatical items in the text -Lexical density calculation - software

Table 3.1 (Continued)

Quantitative Stage Instrumentation

Type of Analysis	Definition of measured item	Writing competency measured	Writing Production Considered	Tools for Analysis
Vocabulary Complexity (Nation, 2001)	The index of unique words frequency distribution	Vocabulary used	Only vocabulary that is unambiguous (i.e. with minor grammatical and/or spelling errors).	Frequency distribution software calculations based on published word lists – 1-999 and 1000-2000 (Nation, 2001) and on "above 2000 list" compiled by the researcher

Table 3.1 (Continued)

Quantitative Stage Instrumentation

Type of Analysis	Definition of measured item	Writing competency measured	Writing Production Considered	Tools for Analysis
Multiple-Trait Rubrics CARLA (n.d.); Ferris and Hedgcock (1998).	Assessing the quality of writing accounting for the given topic and the genre	The following traits were considered: (a) rhetorical soundness; (b) presentation and development of the main point and its support; and (c) overall language use.	The whole paragraph	The researcher and trained rater

T-unit Analysis

The syntax complexity, as measured by minimally terminable unit (T-unit) analysis, presents a practical way to analyze students' writing addressing the issue of writing on a syntactic level. A T-unit, as defined by Hunt (1965), is the main clause of the sentence including the subordinated clauses. In this study, the mean length (number of words) of the T-units in each writing was measured. The researcher included both syntactically correct T-units as well as T-units that were incorrect but unambiguous; in other words, T-units that had minor grammatical errors but still conveyed the author's thoughts.

Park (1988) summarizes research findings confirming that mean T-unit length increases with the language and writing maturity of the writer. However, using only the mean length of the main and subordinate clauses is not perceived to be an adequate predictor of writing quality (Crowhurst, 1987; Ferris & Hedgcock, 1998). Therefore, analysis of other features of students' writing, discussed further, was used in the study.

Idea Unit Analysis

Students' writings were analyzed further in order to identify how the participants pack information (Chafe, 1985). In this study, Chafe's definition of idea unit was used: idea unit in a written text "is a clause – that is, it contains one verb phrase, along with whatever noun phrases, prepositional phrases, adverbs, and so on are appropriate" (p. 106). Chafe (1985) argues that although idea unit analysis has been initially developed for studying spoken language, it could be applied to written language as well. He proposes that idea-unit analysis would allow researchers to evaluate text readability, and information quantity.

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Chafe, along with others (Carrell, 1987; Hildyard & Hidi, 1985; Wong, 2003) hypothesizes that idea unit presents "all the information a speaker can handle in a single focus of consciousness" (Chafe, 1985, p. 106). Thus, idea units were first identified and employed for spoken language analysis and criteria that constitute idea unit in spoken language were defined. These criteria are: (a) clause-final intonation contour; (b) pausing; (c) "tendency for idea units to consist of a single clause: one verb, with whatever accompanying noun phrases are associated with it." (Chafe, 1980, p. 14). Chafe states that neither one of these criteria is obligatory; "it seems to be the case that clause-final rising or falling pitch is the single most consistent signal" (Chafe, 1980, p. 14).

In his 1985 publication on linguistic differences of written and spoken language, Chafe (1985) continues developing the idea unit construct presenting it in written discourse. He states the following about the idea units in written language production:

> most readable writing shows idea units rather clearly. Readable writers
>
> seem to organize their material intuitively into this format, using
>
> punctuation marks to show idea unit boundaries, or to show the same
>
> intonational and hesitational patterns that in spoken language would
>
> signal idea unit boundary. (p. 107)

Further, Chafe presents the specifics of the idea units identified in writing: compared with the idea units produced in spoken discourse, written idea units tend to be longer, the mean length of spoken language idea unit is 6-7 words (Chafe 1980, 1985), whereas the mean number of words per idea unit in written language is approximately 11 (Chafe 1985).

When considering the construct of idea unit in the context of this study, it was important to establish a definition that would provide some concrete criteria for identifying idea units in written texts, thereby allowing the researcher to approach the writings of the participants in a consistent manner. In his 1985 publication, Chafe does not provide an explicit definition of idea unit in written language production. However, if we re-consider Chafe's definition of idea unit of spoken language and apply it to written discourse, it would become clear that the two criteria (intonation pattern and pausing) stated for idea unit of spoken language could not be applied. Thus, the third criterion is adopted by Chafe (1985): the tendency of an idea unit to consist of a single clause should be considered as the leading formal criterion. However, there are four exceptions stated in Chafe's analysis of written idea units. He identifies 14 different ways for idea unit expansion in written language (for the complete list of criteria, refer to Chafe, 1985, pp. 108-110); while 10 of the expansion devices keep the idea unit within the boundaries of one clause, the following four expansions suggest the use of more than one clause per idea unit:

> 10) Complement clauses:
>
> Certain interesting aspects of the situation indicate *that we*
> *are not witnessing obligatory synchronic rules at all in*
> *the younger speakers*. Her realism involves the refusal to
> recognize *that literary language has no referent*.
>
> 11) Restrictive relative clauses:

The rules developed here have environmental constraints

that are important for some speakers but not applicable

for others.

….

13) Indirect questions:

It is important to ask *whether a given theory deals with*

the kinds of cognitive skills that children acquire

normally.

… since it reveals much in a general way about *how he or*

she looks.

14) Indirect quotations:

Lakoff says *that a sentence like 6b presupposes that*

Easter Williams is not a fish.

Some speakers say *they heard someone say once that this*

referred to reeds in the lake here. (Chafe, 1985, p. 110,

emphasis in the original)

Further, Chafe suggests that two or more idea units can be integrated into one sentence, by using (a) dependent clauses conjoined by a different coordinating conjunctions such as *after, although, as, as if, if, in order to* and so forth, should be considered as separate idea units. In addition, (b) appositives (The teacher opened the book, *a green volume always kept on the desk*); and (c) participial clauses (*Considering the consequences of failing to meet users' expectations*, the programmer decided to test the software packet one more time.), suggesting that these three constructs are to be considered as separate idea units.

Summarizing Chafe's written discourse idea unit presentation (Chafe, 1985), in the current study, the following working definition of idea units was used in the process of identification and analysis of the idea units in the participants' writings: idea unit is a separate clause, "that is, it contains one verb phrase along with whatever noun phrases, propositional phrases, adverbs, and so on are appropriate" (Chafe, 1985, p. 106); however, if a complement or restrictive relative clause is present or indirect question or indirect quotation is used, these belong to the idea unit presented by the main clause. Dependent clauses, appositives (including examples provided by the writer, i.e., *for example: New York, Houston, Los Angeles"*….), and participial clauses (past and gerund) are separate idea units. In addition, when analyzing CMC discourse production, phrases indicating agreement, disagreement, understanding and so forth were be considered as separate idea units. For example: "Thank you!" "Yes", a symbol of a smiley face etc.

Further, this definition is discussed in the context of the current study. Chafe's (1980, 1985) idea unit presentation is based on language data produced by native speakers or speakers whose written and oral language production abilities are close to native-like. In other words, there are no morphosyntactically incorrect idea units considered in the discussion. The language data analyzed in the current study were produced by English language learners of intermediate level of proficiency; morphosyntactical and semantic issues were evident in these data. In this study, idea units were applied as a measurement of effective written language use that shows ability to present information in a way that is complex and reflects the specifics of the written discourse being at the same time reader sensitive. In addition, the goal of this measurement was to identify how much information the students attempt to handle in one

attention focus. This was measured through the mean length of idea units, while the quantity of information the students attempt to handle in a paragraph was measured by the total number of idea units used in the paragraph writing. Because using idea units allowed the researcher to focus on the quantity of information that the learners attempted to communicate in their writings, the researcher decided to use morphosyntactically correct idea units as well as idea units that contained certain errors but were unambiguous in the context of students' writings. The elimination of the ambiguous idea units allowed accounting for unreadable portions of writing.

Lexical Density Analysis

Besides the formal characteristics of a clause, it is also important to consider that the clause is a functional unit that carries the construction of meaning in a triple function. Halliday (1989) outlines these three functions of a clause as follows:

(1) as the presentation of the phenomena of experience, as these

are interpreted by the members of the culture; (2) as the

expression of speech function, through the categories of mood

[…]; and (3) as the bearer of the message, which is organized in

the form of theme plus exposition. (Halliday, 1989, p. 67).

The former three characteristics of a clause lead to application of lexical density as a measure that would further disclose the characteristics of the texts written by the participants.

While the vocabulary complexity (the measure discussed next) allowed identification of the richness of active learners' vocabulary, as demonstrated by the number of unique words used, lexical density revealed the average amount of lexical

information per clause. In order to perform the lexical density analysis, the formula

proposed by Halliday (1989, p. 65) for calculating lexical information per clause was

applied. This involved counting the lexical items as a ratio of the total number of clauses:

$$\frac{\text{Total number of lexical items}}{\text{Total number of clauses}} = \text{Lexical density} \qquad (1)$$

Lexical items are the content words which function in a system that is indefinitely

extendable. Halliday provides the following example to illustrate the participation of

lexical items in such indefinitely extendable systems: "[…] the word *door* is in contrast

with *gate* and *screen*; also with *window, wall, floor* and *ceiling*; *with knob, handle, panel,*

and sill […] – there is no way of closing off the sets of items that it is related to"

(Halliday, 1989, p. 63). Thus, the lexical item is a word or a combination of words that

enters an indefinitely extendable set of items. Halliday contrasts lexical items to

grammatical items which function in a closed system and include determiners, pronouns,

most prepositions, conjunctions, some classes of adverbs, and finite verbs. The lexical

items may consist of one or two words in the usual sense. For example, in the phrasal

verbs "stand up" and "go on", the prepositions "up" and "on" do not function in the

grammatical system but are rather "glued" to the verb. The researcher specified the

following grammatical items list used for the current study: (a) determiners , (b)

pronouns, (c) primary (verbal) auxiliaries, (d) modal auxiliaries, (e) subordinators, (f)

coordinators, (g) negations – *not* and *no*, (h) the infinitive marker *to*, (i) ordinal and

cardinal numerals, and (j) inserts (injections) as defined in Biber, Johansson, Leech,

Conrad, and Finegan (1999). The analysis was performed in as follows: all the unique

words for the students' texts were compiled in a list, these words were analyzed by the

researcher and confirmed by a co-rater. Only words that belong to the 10 grammatical

items listed in this section of the chapter were considered for further analysis. The next step was to find and analyze these words within the specific context in which they were used. This analysis was necessary based on the fact that homonymy is common in English language and some English words can be members of both grammar and lexical groups (Biber et al., 1999). For example, 'before' used in different contexts, can be a preposition, an adverb, or a subordinator. The list of the grammar items was updated with a description of each item outlining it possible usages in different contexts. As a guideline for this description and for the provision of a comprehensive list of possible usages of the items, the Merriam-Webster On-line Dictionary (2006) was used. Then, each usage of each item of the list was analyzed within the context and it was determined if it belongs to the lexical or grammatical items group. This analysis was performed by the researcher and a trained co-rater assured the accuracy with more than 98% agreement achieved. During the analysis, all items that were identified as grammatical were marked with an asterisk. This marking aimed to signal to the software program used to perform the calculations of lexical density formula that these items should be subtracted from the total number of words in each writing, which would provide the number of lexical items in the writing.

Taking into account that clauses are an essential element for meaning construction, when applying lexical density analysis, only lexical items and clauses that were unambiguous (i.e., grammatically correct or with minor grammatical and/or spelling errors) were considered in the analysis. This lack of ambiguity was determined by two raters (one of them the researcher and the other a trained co-rater) who scored the participants' writing samples, high inter-rater reliability (>90%) was achieved.

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Vocabulary Complexity Analysis

The vocabulary complexity score aims to allow one to make the assertions of the participants' active vocabulary richness on a given topic, and to allow for the judgment of the frequency characteristics of this vocabulary. The vocabulary complexity score was calculated based on the number of unique words (families) used in each paragraph. These counts were divided into three groups: (a) words that are in the list of the 1,000 most frequently used groups; (b) words that belong to the second group of most frequent 1,000-2,000 words; and (c) words that do not belong to Group 1 and 2 but are recognized as existing words. The sources of these lists for the first two groups (the first 2,000 words) are *A General Service List of English Words* designed by Michael West, and *The Academic Word List* holding 570 word families designed by *Coxhead* (Nation, 2001). The third list, Above 2,000 words list, was compiled by the researcher; it included the words used in the texts composed by the students. The criteria considered when compiling this list were for the words to be existing words in English language and not to appear in the first two frequency lists; however, several exceptions were made for the names of foreign holidays and foods. The analysis was performed using customized software designed especially for the current study. The functions performed by this software are discussed in detail in the current chapter.Two independent raters verified the accuracy of the Above 2,000 Words List. The inter-rater reliability was higher than 99%. The few instances of discrepancies were discussed and corrected; these instances were based on human error rather than on disagreement about the list structure.

For each text three raw vocabulary complexity scores were identified – unique words (families) based on which the final vocabulary complexity score was calculated:

(a) Group 1: 1,000-word frequency group, based on the 1-999 word frequency list (Nation, 2001); (b) Group 2: 1,000 to 2,000-word frequency group, based on the 1,000 to 2,000 word frequency list (Nation 2001); (c) Group 3: words that do not belong to the first 2,000 most frequent words but were recognized as existing words, based on the above 2,000 word frequency list, compiled by the researcher. The final vocabulary complexity score was presented as a ratio of Groups 2 and Group 3 raw score to Group 1 raw scores. The formula used for the calculation of the final vocabulary complexity score was:

$$\frac{\text{Raw Score Group 2} + \text{Raw Score Group 3}}{\text{Raw Score Group 1}} \times 100 = \text{Vocabulary Complexity Score} \quad (2)$$

Multiple-trait Scoring Rubrics

The last instrument used to assess the pre-treatment and post-treatment writings was multiple-trait scoring rubric, with a maximum score of six. The rubric design decisions were made based on the rubric creation guidelines presented on the Virtual Assessment Center, a web resource published and maintained by the Center for Advanced Research on Language Acquisition (CARLA, n.d.), as well as on the writing rubric analysis presented by Ferris and Hedgcock (1998). The full text of the rubric is available in Appendix 3A and 3B.

An even number of levels for the multiple-trait rubrics was chosen based on the CARLA Virtual Assessment (CARLA, n.d.) guidelines. According to these guidelines, the even number of levels allows raters to make a more precise judgment of writing performances. As stated by Ferris and Hedgcock (1998), multiple-trait rubric allow for the development of sound criteria for assessing the quality of writing in accordance with the given topic and genre. This type of rubric allows both the instructors and the students

to focus on specific textual aspects. Further, the scoring rubric designed for this study aimed to elicit the articulation and development of a narrative/descriptive paragraph focusing directly on the purposes of the writing task. The following traits were considered when evaluating the paragraphs: (a) rhetorical soundness; (b) presentation and development of the main point and its support; and (c) overall language use. In order to ensure that the multiple-trait scoring rubric instrument was sensitive to the requirements of the writing task performed by the participants, the rubric designed for this study were discussed with the writing instructors participating in the pilot study, and their feedback was considered in the process of the instrument design.

Rubric design considerations. During the rubrics design period and the pilot test, the validity of the multiple-trait rubric scores was ensured using the guidelines outlined by Ferris and Hedgcock (1998). To ensure construct-related validity, the rubrics were written closely following the paragraph rating scale and multiple-trait scoring guide presented by Ferris and Hedgcock (1998). Content related validity was guaranteed through careful consideration of the information about narrative paragraph structure requirements, which was communicated to the students by the instructors and stated in Boardman and Frydenberg (2002) – the writing textbook used by the students. Further, it was ensured that the participants, the instructors, and the researcher had a common understanding of the rubrics items, thereby maintaining integrity of the rubrics.

Text Analysis Software

A custom software application was designed by an experienced programmer who followed the function specifications provided by the researcher. These specifications requested the calculation of the following text analysis features: (a) the total number of

words, (b) the mean length of T-units, (c) the mean length and number of idea units, (d) the number of lexical items, and (e) word frequency distribution. The application was written in the PHP 5 open source programming language (PHP, 2006) using as a backend the open source MySQL database server (MySQL, 2006). The reason for employing a computer application rather than manual counting and calculation is that, although all of the text-analysis operations could be performed by hand, when working with a large data sample the possibility for human error increases. However, selected portions of the data were analyzed manually and the outcomes of this analysis were compared with the computerized analysis in order to assure the reliability of the computer algorithms.

Internet Based Instruments for Data Collection

The application that was used for both the asynchronous CMC pre-writing tasks and the interview process is Internet Based Classroom Assistant 2 (ICA2). This is an online courseware developed by Nicenet (1998), which is a volunteer, non-profit organization committed to providing free services to the educational Internet community. The access to the application is free of charge, and no advertising is displayed on any of the screens. In addition, ICA2 is attractive for educational use because no supplementary software is necessary to run the application. The only requirement is Internet connection; once accessed online, the application is opened through the web browser installed on the user's end. This application is relatively simple to use, has a very low learning curve, and using it should not impose an additional burden on the students or teachers (Zoran & Sarieva, 2003). The ICA2 user-friendly interface allowed to keep the training time of both teachers and students to a minimum. This courseware has been used by most of the instructors in the IEP for several years prior to the data collection period, and during

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professional meetings, the instructors reported it to be a useful class management tool

(ELI – CALL, 2003). Among the multiple features offered on ICA2, there is an

asynchronous communication conference forum available. In this forum, the instructor

can post discussion questions and assign students to multiple discussion groups. Another

important feature of ICA2 is that it protects participants' privacy – only users who have

the unique class key generated by ICA2 and given only to the instructor can join a

particular class.

The application that was used for synchronous communication is Language

Educational Chat System (L.E.C.S.). This is a web-based chat application created by

Kanto Gakuin School Corporation, Japan (n.d.). The creators and researchers who have

used the application report that this is a flexible and easy-to-use tool designed especially

for language teachers and learners, (Kanto Gakuin School Corporation, Japan, n.d.);

Freiermuth, 2002). As with ICA2, the only requirement is Internet connection. Once

accessed online, the application is opened through the web browser installed on the user's

end. The teacher has the ability to see students' chat logs, as well as language analysis

data generated from these logs, such as counts of overall words used, target words, and

students' turns. Students on their end also can access these data, but only for their own

chat logs. The "enter chat" procedures are not time-consuming or complicated; the

student simply needs to enter the teacher's user name and his/her name in order to join

the chat. Although simple, these procedures protect users from possible intruders. A

possible drawback of the application might be the fact that along with the English

explanations, explanations in Japanese are appearing on the log-on screen. However, after

consulting with instructors who have used the application as well as with the students

who participated in the pilot study, it was concluded that this is not a distracter that could impede the SCMC process, in particular, and the language learning process, in general.

Treatment Design Considerations

Prompt Design Considerations

The prompts designed for the pre- and post-treatment paragraph writing assignments were the following:

(a) Pre-Treatment Writing Prompt: The University International Student Organization has invited you to write a note for their newsletter.

The topic of your note is: *My favorite U.S. holiday.*

Your note needs to be in the format of a descriptive paragraph. Write the first draft of this descriptive paragraph. You have 30 minutes.

Title: *My Favorite U.S. Holiday*

(b) Post-treatment Writing Prompt: The University International Student Organization has invited you to write a note for their newsletter.

(c) The topic of your note is: *The People of the United States*.

Your note needs to be in the format of a descriptive paragraph. Based on the discussion you had with your partner using L.E.C.S. or ICA2, write a descriptive paragraph about the people of the United States. Make sure that it corresponds with the pictures you received for the discussion. Include in your description all the ideas presented by all the pictures. You can use the records of your L.E.C.S. or ICA2 discussion when composing the paragraph. You will have 35 minutes to write your first draft of this paragraph.

The writing tasks were presented based on a situation frame stated in the prompts; this allowed the pre- and post-treatment prompts' format to be categorized as framed format (Kroll & Reid, 1994). Several variables were considered in the process of prompt design following Kroll and Reid's guidelines: (a) writing situation – the prompts were designed in accordance with the Intermediate Academic Writing course goals which specified that students would master paragraph writing (including descriptive paragraph) during the first half of the semester; (b) content – the prompts aimed to generate writing on a content familiar to the students through their personal experiences and previous discussions of U.S. culture in their Academic Writing and Cultural Contacts classes; (c) prompt linguistic features – the language of the prompt was adapted to the proficiency levels of the students, and prompt clarity was confirmed by the writing instructors and the participants in the pilot test; (d) task specificity – the task, the writing time-frame, as well as the required rhetorical features were explicitly presented; (e) rhetorical features – the expected writing outcome (a descriptive paragraph) and the audience/purpose of the paragraph were explicitly stated in the prompt. When designing the prompts, the researcher also took into account factors such as students' age, language proficiency level, and the content of the instructional material used in the writing class.

Treatment Task Design Considerations

Before discussing the details of the treatment task design, it is important to state the definition of task adopted in the current research. After carefully studying a collection of language learning task definitions developed and adopted in language acquisition research and presented by Johnson (2003), the researcher was guided by two definitions of tasks that complement each other. Nunan (1989) defines task as a "piece of classroom

work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than form. The task should also have a sense of completeness, being able to stand alone as a communicative act in its own right" (p. 10). The second definition that of Swales (1990) expands Nunan's definition. Like Nunan, Swales recognizes the fact that a task involves comprehension and communication in the target language involving meaning construction. Swales further defines task as "one of a set of differentiated, sequenceable goal-directed activities drawing upon a range of cognitive and communicative procedures relatable to the acquisition of pre-genre and genre skills appropriate to a foreseen or emerging sociorhetorical situation" (p. 76). Thus, in this study, task was viewed as a communicative activity that focused on meaning and involving language comprehension and manipulation; this activity can stand alone, but is also designed to support the development of specific genre writing skills through a range of communicative procedures in a specific sociorhetorical situation.

Further, the specific features of the CMC treatment task were planned following the communication task design guidelines and communication task typology validation presented by Pica, Kanagy, and Falodun (1993). Pica et al.(1993) outlined specific task features as indicators for interaction opportunities in the target language. These features are: (a) comprehension during the communication process; (b) receiving feedback; and (c) generating modified production. Pica et al. (1993) concluded that, to insure productive interaction, the participants should work towards a common goal.

In the treatment task, the following relationships, requirements, goals, and outcomes were considered. First, the task was designed as an interactional activity

between two ESL learners of the same proficiency level (intermediate) where each dyad member held the same information in a picture format. This information needed to be verbalized and interpreted by the participants during the interaction process. Second, this design set the interaction requirements, i.e. each dyad participant had to supply and request information in the process of meaning negotiation and task outcome construction. Third, during the interaction, both participants should be striving to achieve the same goal, which was to brainstorm paragraph content and organization. Fourth, for the CMC task itself, more than one possible outcome was acceptable, namely the interpretation of the specific pieces of information that were presented in the pictures given to the participants might differ; however, considering the framework of the given topic, "The People of the United States", a great variety of interpretations was not expected (these expectations were confirmed by the pilot study data analysis). However, the organization and interpretation of these single outcomes in the paragraph can be different. The CMC task is presented in Appendix 4.

Taking into account the fact that communicative tasks discussed by Nunan (1989), Swales (1993), and Pica et al. (1993) were performed in a face-to-face environment, validation of communicative tasks performed via CMC was considered (Blake, 2000). Based on the findings of the study of intermediate level Spanish language learners who participated in synchronous CMC while solving different communicative tasks, Blake concluded that in a synchronous CMC environment, the same factors outlined by Pica et al. (1993) contribute to successful interactions. No studies that compare asynchronous and synchronous student-student interactions generated during completion of a communicative task as categorized by Pica et al. (1993) were found by

the researcher. However, Sotillo (2000) in her study of advanced ESL writing classes, compared reading discussions performed by two groups of students who participated in synchronous and asynchronous CMC. She found that in both groups the discussion shared similar discourse features; however, the SCMC discussion data demonstrated greater variety of discourse features and were more interactive, while the ACMC postings were more focused on the discussion topic and were lengthier and syntactically more complex. Therefore, based on the fact that there were similarities in the two CMC modes of communication that allow effective communication, and that the communicative tasks which were designed following the principles that Pica et al. (1993) were concluded to be successful in an SCMC language learning environment, the researcher decided to apply the same task for both ACMC and SCMC groups. Further, this decision was driven by Salaberry's analysis of communication costs that could affect technology-enhanced interaction (Salaberry, 2001). He points out that the cost of delay in communicational media without contemporality constraints such as e-mail is minimal.

Data Analysis Procedures and Reliability and Validity Considerations

Text Normalization and Coding

After the data were collected, the CMC and the pre- and post-treatment paragraph texts were normalized to assure reliable word counts. The nature of this normalization was the following: (a) the paragraphs were carefully read by the researcher and all the ambiguous phrases and sentences were identified by putting them in square brackets in order to flag them for exclusion during the computerized text analysis, (b) the CMC interactions and the paragraphs were read by the researcher and all misspelled words were replaced with their correctly spelled counterparts while the in their original spelling

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were bracketed. Following is the explanation of the reasons for these normalization procedures and the way they were implemented.

The necessity to identify ambiguous text segments was based on the fact that the researcher made the decision to use both incorrect and correct text units (T-units, idea units, and clauses). This decision was determined by the specific nature of second language learners' writing. While second language learners might be unable to build a text segment without making grammar, vocabulary, and/or spelling deviations from standard English, they are able to construct texts that are readable and convey both facts and ideas. Thus, the researcher realized that excluding all the incorrect but unambiguous clauses and sentences from the students' writing would diminish the ability to distinguish features that were significant for making conclusions about the nature of learners' writing process and development in the context of the current study.

The working definition of unambiguity/ambiguity constructed and adopted by the researcher was the following: unambiguous text segments (clauses and sentences) may have some grammatical inconsistencies; however, they are easy to understand and do not impede the readability of the text. If a text segment requires using extensive assumptions on the reader's side in order to understand its meaning, this text segment (phrase, clause, or sentence) should be considered as an ambiguous and excluded from the text analysis. In addition, words which were repeated or did not fit semantically into a phrase were considered as ambiguous text and thus excluded from the analysis.

The ambiguity of the text segments was established following strict procedures: (a) the researcher read carefully the paragraphs, identified and marked in the text the ambiguous phrases and sentences; (b) to assure intra-rater reliability (Moskal & Leydens,

2000), the researcher reviewed the paragraphs one more time one day later; (c) All the excerpts identified as ambiguous were reviewed by two independent raters who were trained by the researcher. These raters used the working definition of unambiguity/ambiguity when identifying the ambiguous text segments in the data. The percentage of agreements about the ambiguous text segments was 89.29% with Rater 1 and 85.71% with Rater 2. The researcher was not satisfied by this percentage of agreement and reviewed carefully the portions of the data that was interpreted differently by the raters and herself, after the researcher and the raters discussied the problematic segments of the data, the agreement percentage achieved was above 95%, which is considered to be a high percentage of agreements (Miles & Huberman, 1994); and (d) each of the two independent raters reviewed the full text of 14 randomly chosen paragraphs which presents 10% of the paragraphs; thus the total of 20% of the paragraphs were reviewed. The goal of the raters was to identify excerpts of ambiguous text unrecognized by the researcher. High inter-rater reliability above 98% was achieved with both raters (Miles & Huberman, 1994).

The second text normalization procedure was spelling normalization. Normalizing the spelling was necessary in order to be able to use computer software for the lexical density and vocabulary complexity analysis. In this analysis a comparison of the vocabulary items used by the students with electronically stored grammatical items list and frequency word lists (Nation, 2001) was performed. The researcher identified all the misspelled words in the data, marked them by placing square brackets around these words, and provided the correct spelling for them immediately after the brackets. For example: "… with big buildings one *[nest] next* to the other."

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In this procedure misspelling was defined as an instance when (a) a word is spelled so it appears to be wrong and this spelling does not correspond with any English word, for example *[whant] want*; or (b) a word is spelled as an English word that belongs to another word family: for example *[nest] next*; instances when the same family word was used in a inappropriate form, for example *make-made, student-students* etc., were not considered to be misspellings; or (c) a word that contains two stems is spelled as two words: for example *[some where] somewhere*. It is important to note that when identifying the misspelled words and making the decision about the correct spelling, the researcher extensively referred to the context of the students' writings. In order to assure the reliability of these spelling interpretations, the researcher used a second rater to check 100% of the writings and verify that all of the spelling mistakes as identified in the operational definition explained. With this rater, 100% agreement was achieved. Next, two independent raters reviewed all of the identified spelling mistakes and their corrections accounting for the context in which they appeared. High inter-rater reliability was achieved: 97.88% with Rater 1 and 98.94% with Rater 2.

After the students' texts were normalized in the above-described way, the number of words in each paragraph was calculated. These numbers were stored in a database that was built to assist the calculation process of the mean length of T-units, idea units, lexical complexity, and lexical density of students' writings. This approach was viewed to assure consistency and accuracy when calculating the individual scores. Further, the students' paragraphs were coded identifying the T-units, the idea units, and the clauses for each paragraph. The researcher performed the coding twice on two different days to assure higher intra-rater reliability of the coding. Next, a trained rater reviewed 40% of the

coded data and confirmed or disconfirmed the coding of the T-units, idea-units, and clauses. For all three criteria high inter-rater reliability was achieved: for T-units the percentage of agreement was 98.17%, for idea-units it was 97.95%, and for clauses – 98.18%.

Multiple-trait Rubric: Reliability and Validity Considerations

The instruments had been examined based on the results of the pilot test conducted in the Fall semester of 2004 in the targeted IEP. The writing instructors had been trained to use the rubric. They and the researcher had assigned a score to each student paragraph produced during the pilot test using the multiple-trait rubrics, and the reliability of each score had been assessed by comparing the scores assigned to the pilot test writing tasks performed by the participants. For the pilot pre-treatment and post-treatment paragraphs, the inter-rater reliability for the rubrics scores had been calculated to be 91% by using Miles and Huberman's (1994, p. 64) formula. This formula presents the inter-rater reliability as the following:

$$\frac{\text{Number of agreements}}{\text{Number of possible agreements}} = \text{Inter-rater Reliability} \qquad (3)$$

According to Miles and Huberman (1994), an inter-rater reliability should be in the 90% range; therefore, the researcher was satisfied with the results and concluded that the designed rubric had generated consistent scores from different raters when applied by trained evaluators.

Following the procedures applied in the pilot test, in the current study both the pre- and post-treatment paragraphs were scored by two independent raters, one of them the researcher and the other the ESL writing instructors who participated in the study. They were trained in applying the research instrument discussed above. To ensure the

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reliability of scores, strict application of the multiple-trait rubrics was required. High inter-rater reliability the scores (in the range of 90%) was sought. In order to guarantee high reliability of scores, if a score differed by more than 10%, raters discussed the specific writing sample and came to a consensus. Further, to obtain comparable scores for the statistical analysis, all scores were converted to *z*-scores (Glass & Hopkins, 1995).

<div align="center">Qualitative Stage Instrumentation</div>

<div align="center">*The Researcher*</div>

In a qualitative study, the researcher is the main data collection and interpretation instrument (Lincoln & Guba, 1985; Patton, 2002). The nature of qualitative inquiry involves researcher's active participation in the study; following Patton's (2002) guidelines, the researcher plans "to adopt a stance of neutrality with regards to the phenomenon under study" (Patton, 2002, p. 51). In other words, in this specific study the researcher's goal was not to work towards proving a particular concept or theory but rather to investigate certain issues, in this case, issues related to incorporating CMC into the language learning process, and, more specifically, in the process of establishing writing skills in a second language. However, the neutrality of the researcher is not equivalent to detachment; it rather involves empathy – showing understanding of, interest in, and caring about the participants (Patton, 2002).

During the qualitative stage of the current study, the researcher aimed to collect data that would disclose both the observable behaviors of the qualitative participants and their internal views, feelings, experiences, and opinions, as well as questions that would reveal the intertextual relation of the CMC discussion text created by the participants in the process of pre-writing collaboration and the texts that each participant produce

afterwards. The qualitative stage was an ongoing stage that involved data collection before, during, and well after the quantitative stage data collection and analysis was completed. The qualitative data collection process started before the beginning of the semester during the informal meetings with the non-student participants in the study: the curriculum designer, the CALL consultant, and the writing class instructor. Qualitative data were collected through observations, students' ACMC and SCMC communicative task logs, writing samples, CMC interviews, and informal interviews with the instructors. Following is a description of additional instruments intended to be used in the study.

IEP Documentation

The researcher collected data through various documents related to the IEP where the study was conducted and more specifically to the writing classes of the targeted level. These included: (a) the Goals and Objectives document for Academic Writing III class (Appendix 1A); (b) Placement Test information (Appendix 1B and 1 C); and (c) Integrated CALL Curriculum Objectives and Activities document (Appendix 2). These documents were provided by the non-student participants and contributed to the collection of thick and rich qualitative data. The data collected using these instruments supported building the background of the case studies and the understanding of the observed processes.

Observation Field Notes

During Step 2 of the Qualitative stage, the researcher focused the class observations on all students. The following trends that emerged from the observation data were noted: (a) group interactions during the face-to-face and computer laboratory classes; (b) student/teacher interactions during the face-to-face and computer laboratory

classes, (c) attitudes and opinions that students express and demonstrate towards writing;

(d) attitudes and opinions that students express and demonstrate towards technology, and

more specifically towards computers, and their implementation in the language learning

process.

During each class session, raw field notes were taken. The raw field notes were

used to create extended field notes in a narrative format. This aimed to organize and

reduce the amount of observation data by creating condensed notes of interactions,

events, behaviors, attitudes, and opinions. The informal debriefing sessions with each of

the four teachers participating in the study informed the researcher in the process of field

observations. In order to assure the credibility and reliability of the data, in addition to the

informal debriefing session held on a regular basis, the researcher discussed these field

notes with the teachers in order to assure that the dynamics of the observed classes were

depicted and interpreted correctly. While it is difficult to report the agreement percentage

as an outcome of these discussions, based on these outcomes, the researcher concluded

that the qualitative data depicted in the field notes reflected the targeted processes. In

addition, the final narrative of the analysis of the computer laboratory sessions presented

in Chapter IV was shared and discussed with the teacher who was a participant in the

study during both semester in which the data were collected. She confirmed the trends

depicted, described and interpreted by the researcher.

Writing Samples and CMC Logs

The paragraphs written by the participants following writing task described earlier

in this chapter and the pre-treatment CMC discussion logs produced by the students

during their pre-writing discussion represented another set of qualitative instruments that

provided insights about the processes under investigation. The ACMC logs constituted of students' asynchronous discussion exchange performed on the conferencing section of via ICA2; while the SCMC logs presented the synchronous discussion exchange of the participants of the SCMC group. These exchanges were performed in order to complete the pre-writing treatment CMC task described earlier in this chapter. The students wrote their first drafts of the descriptive paragraph of the assigned topic. The CMC logs also provided insights about how each student approached the computer-mediated communication act. In addition, the aim was to collect data that would allow the investigation of the intertextual relations that existed between the paragraphs created by students and text generated during the CMC discussion.

The CMC Interviews

The computer-mediated interviews were conducted via ICA2. The Conferencing section of the courseware was used for the interview. The overall goal of the interview was to reveal the past and current experiences of the participants and how they perceive these experiences in the context of the pre-writing CMC task and their ESL writing development. More specifically through the interviews the researcher aimed to find out what were the participants' views on education, writing, as well as how they perceived the role of computers in education and for acquiring writing skills. In addition, the interviews aimed to elicit students' perceptions of CMC in general, the CMC exchange in which they participated, in particular, and how this supported their writing performance level and writing skills development.

The interview questions are presented in Table 4.3, the table denotes type of questions and provides the question text. These interviews served as a tool for the

collection of self-reported data from the participants. Further, these data were triangulated with participants' CMC logs presenting their CMC exchange during the treatment task, first draft paragraph writings, and field notes taken during the overall data collection process.

In the beginning of the interview (Questions 1-10), the researcher collected demographic data about participants including gender, age, country of origin, native language, and educational background such as educational level, country(s), and educational settings where education was received. Issues related to education, writing, and CMC were elicited from the participants. Further, Questions 11-18 were related to the treatment and its effect on writing. The researcher aimed to elicit information regarding the participants' comfort levels and experiences with computers and CMC. All students participated in the interviews.

A combination of interview approaches was planned to be applied: standardized open-ended interview and interview guide (Patton, 2002). The researcher decided to follow these approaches because the standardized interview format allows each interviewee to be asked the same set of initial questions, hereby permitting the identification of common themes and issues. On the other hand, the follow-up questions that are constructed with consideration of the previous participant's responses and the qualitative research sub-questions used as an interview guide, were expected allow the researcher to explore in more depth issues related to the basic lines of inquiry in the context of the participants' responses. The interview questions encompass four different types: (a) background questions, (b) experience and behavior questions, (c) opinion and value questions, and (d) feeling questions (Patton, 2002). The goal of these questions was

to elicit data related to four trends: (a) attitudes towards writing, (b) computer and CMC related experiences, (c) CMC interaction and task perceptions, and (d) CMC interactions: tools and typing. Table 3.2 presents the question types and trends.

Table 3.2

Interview Questions Types and Trends

	Question Type	Question Trend
1-4	Background	(a) age; (b) country of origin; (c) native language; (d) educational background
5	Opinion	attitudes towards writing
6	Current Experience	attitudes towards writing
7	Current Experience	attitudes towards writing
8	Current Experience	computer and CMC related experiences
9	Past Experience	computer and CMC related experiences
10	Past Experience	computer and CMC related experiences
11	Opinion	CMC interaction and task perceptions
12	Feelings	CMC interaction and task perceptions
13	Current Experience	CMC interaction and task perceptions
14	Opinion	CMC interaction and task perceptions
15	Current Experience	CMC interaction and task perceptions
16	Current Experience	CMC interaction and task perceptions
17	Current Experience	CMC interactions: tools and typing
18	Current Experience	CMC interactions: tools and typing

To assure the credibility and the transferability of the interview data, three steps were taken. (a) The content of the questions was discussed with the researcher's committee members who are experts in the field of educational research, ESL education, and ESL writing, (b) the questions also were discussed with the ESL instructors teaching the pilot study participants in the Academic Writing classes to assure that the language of the questions is suitable for the students' level of language proficiency, and (c) during the pilot study, interviews with sample questions were conducted with all participants. The goal was to ensure that the questions' were clear and comprehensible for the participants, and to determine if the information elicited during the interview would allow the qualitative research questions to be answered.

It is important to attend in more detail to the mode of the interviews because the CMC mode chosen for this study differed from the traditional face-to-face way of conducting interviews. The CMC mode of interviewing was chosen based on the following reasons outlined in the research on CMC and second language learning (Beauvois, 1997; Kern, 1995; Sengupta, 2001; Warschauer, 1999): (a) CMC provides a discussion space in a less threatening environment compared with face-to-face interactions; (b) the students have more time to construct their responses and tend to produce longer sentences expressing their ideas in more depth; and (c) learners express themselves at their own pace and can review, revise, and clarify their postings before submitting them.

Researchers from fields not related to ESL report computer-supported interviews to be less threatening: during this type of interview, people tend to provide more responses than in situations in which they feel insecure or intimidated (Nathan, 2001).

Using asynchronous CMC interview mode was expected to eliminate some of the disadvantages of face-to-face interviews, such as unintentional interviewer influence due to gestures, mannerisms, or face expressions that indicate subtle signs of agreement or disagreement (Tashakkori & Teddlie, 1998). This mode of interviewing was expected also to allow for easier member checking following data analysis through using ICA2 for posting questions to the participants without requiring a special meeting. However, it is important to note that these expectations were not met in the current study: some of the open-ended questions and the majority of the follow-up interview guide questions based on students' responses received a limited reply from the participants which was attributed to the asynchronous nature of the interview many of the students ignored these questions. This aspect of the interviews is further discussed in the Limitations of the Qualitative Stage section of Chapter IV.

Trustworthiness, Credibility, and Transferability Considerations

In order to establish the trustworthiness of the qualitative stage of the study, specific techniques suggested by Lincoln and Guba (1985) were considered and applied. The credibility of the data collected in the study was assured through the prolonged engagement of the researcher. Together with the non-student participants in the study, the researcher took part in the writing curricula discussion and adjustment in order to confirm that the study would not have a negative impact on the naturalistic nature of the learning environment. In other words, the tasks applied in the study fitted within the philosophy of the IEP where the data were collected, and they were consistent with the goals and procedures of the writing course. Further, the researcher closely observed the intermediate level Academic Writing classes during the whole semester. During the

whole process of data collection, the researcher was taking field notes that account for the face-to-face and computer laboratory sessions and developed research protocols that reflected the processes observed. This provided the opportunity to further collect thick description assuring the transferability of the study as well as information that would reveal the interpretive nature of the research process. During data collection and analysis, the researcher collaborated with a peer and the members of the dissertation committee to ensure that the data were collected and interpreted truthfully and without errors and the conclusions were justifiable. The researcher sought high inter-rater reliability during this process (Miles & Huberman, 1994).

Quantitative Stage: Data Analysis

The statistical procedures applied at this stage allowed the researcher to answer the quantitative research questions of the study as outlined in this chapter. The researcher first compared the ACMC and the SCMC groups in order to identify the degree to which that the groups differed in terms of: (a) age, (b) educational background, (c) gender, (i.e. individual participant's gender and dyad gender composition), and (d) writing abilities. Further, the post-treatment writing scores of the two groups were compared for each of the eight proposed textual features in order to find out if the post-treatment writings were significantly different for the two groups. Finally, an additional quantitative analysis was performed comparing the intertextual connections on a lexical level that the participants in the two groups established between their treatment discussions and post-treatment writing. The data analysis tests and procedures that were employed are presented further. All tests were performed using SAS® v.9.1.3. (SAS Institute, Inc., 2004).

Comparing the ACMC and the SCMC Groups

Group Comparison: Age

The ACMC and the SCMC groups were compared in terms of the age of the students assigned to them. The goal of this comparison was to find out if there were significant differences in terms of age composition between the two groups. The ages of the students were self-reported in the interviews conducted during the qualitative on-going stage. In order to perform this comparison, a two-tailed *t*-test was conducted. The Null Hypothesis for the *t*-test was that the means of the two groups did not differ significantly.

Group Comparison: Educational Background

The ACMC and the SCMC groups were compared in terms of the educational background of the students assigned to them. The goal of this comparison was to find out if there were significant differences in terms of educational background composition between the two groups. Three levels of educational backgrounds were identified based on the interview outcomes: (a) high school; (b) at least one semester of college education, and (c) college degree – either a bachelor degree (or its equivalent) or a master's degree (or its equivalent) – and/or employed prior to their enrollment at the IEP.

In order to perform the statistical comparison of the groups, the researcher collapsed educational level one (high school) and two (college) into one – Pre-College/College. This decision was made due to the small sample size. The decision to collapse these two levels was based on the fact that the majority of the students who already received their college degree were professionals with starting or already established careers; thus, it was viewed that the college level group would be more

similar to the high school level group in terms of their educational background. Consequently, two levels were considered for further comparison analysis of the ACMC and the SCMC groups: (a) Pre-College/College and (b) Post-College level. The groups were compared in terms of the odds of a participant of a particular educational level to be assigned to a particular group (ACMC or SCMC). The odds ratio analysis allowed finding out if there was a statistically significant difference between the two groups in terms of educational level. Further, the groups were compared using Fisher's Exact Test in order to find out if there was an association of student education level and CMC group assignment.

Group Comparison: Gender

This comparison was performed in order to find out if the random assignment of the participants to either an ACMC or SCMC treatment group resulted in groups of similar gender composition. The groups were compared in terms of the odds of a male or a female participant to be assigned to a particular group (ACMC or SCMC). The odds ratio analysis allowed finding out if there was a statistically significant difference between the two groups in terms of gender composition. Further, the groups were compared in terms of dyad gender composition: mixed or the same gender dyads. The odds ratio analysis allowed finding out if there was a statistically significant difference between the two groups in terms of gender composition of the dyads. Fisher's Exact Test in order to find out if there was an association of dyad gender composition and CMC group assignment.

Group Comparison: Pre-treatment Writing

In order to compare the outcomes of the pre-treatment writings, the eight proposed textual measures were compared, namely: (a) the syntactic complexity (measured by calculating the mean length of t-units), (b) the amount of information present in a single focus (measured by mean length of idea units), (c) the quantity of overall information present (measured by the number of idea units), (d) lexical information per clause (measured through lexical density analysis), (e) vocabulary complexity (measured by analyzing the frequency of the unique words used), (f) rhetorical soundness, (g) presentation and development of main ideas, and (h) overall language use.

The first five measures yielded continuous scores, whereas Measures 6 through 8 were presented with ordinal scores. Thus, two different kinds of statistical tests were used to compare the two groups based on the type of scores (continuous vs. ordinal). The pre-treatment Writing Scores 1-5 were analyzed by applying five exact t-tests in order to make inferences about the difference between the means of the two groups (ACMC vs. SCMC) and evaluate how similar the two groups were in terms of writing skills. The Null Hypotheses for each test were that the group did not differ significantly. The Pre-treatment Writing Scores 6-7 were using three non-parametric Mann-Whitney U tests. Again the Null Hypotheses for each test were that the group did not differ significantly.

Analysis of the Post-treatment Paragraphs

The post-treatment paragraphs were analyzed in order to find out if there was a difference between the ACMC and the SCMC groups' post-treatment writings based in respect to the eight proposed textual measures presented earlier. The post-treatment data

was analyzed using analysis of covariance (ANCOVA) method of statistical analysis for the five continuous measures used in the study while the three ordinal measures were analyzed applying three separate Mann-Whitney U tests. When performing the five ANCOVA tests, using accordingly adjusted α (α=.05/5), the possibility of not finding statistically significant effects was high, even though if each of the analyses were performed separately or fewer ANCOVA tests were conducted, at least one of the effects could be detected (Onwuegbuzie & Levin, 2005). Thus, in order to avoid this limitation, the Three-Step Approach for Testing Multiple Univariate Hypotheses proposed by Onwuegbuzie and Levin (2005) was applied. This led to the analysis of the pulled z-scores from all variables in order to compare the ACMC and SCMC groups.

Analysis of Covariance

When using an ANCOVA, an analysis of variance (ANOVA) is combined with regression analysis by adding a concomitant variable (covariate). The goal of utilizing analysis of covariance is to attempt to control statistically for differences that existed before the treatment was implemented for the ACMC and SCMC groups before the treatment (Onwuegbuzie & Daniel, 2003). In this study, each ANCOVA test aimed to answer one quantitative research question, and the concomitant variable used in all tests were the participants' pre-treatment mean scores.

The decision to apply ANCOVA for the analysis of the five continuous scores was driven by the fact that this type of statistical analysis allows for reduction of the bias and clarification of the relationship between the dependant and independent variables through allocating a percentage of the variance in the dependent variable to a potentially confounding variable (Loftin & Madison, 1991). In other words, in this case it allowed

for the adjustment of differences in the writing skills of the participants based on the assessment of pre-treatment writings. The application of this inferential statistical procedure was viewed as appropriate for the current study based on the fact that the ACMC and SCMC groups were assigned randomly (Henson, 1998).

The following null hypotheses were tested: $H_0: \mu_{Aj} - \mu_{Sj} = 0$, where A presents the ACMC group, S presents the SCMC group, and j presents the writing score used in the test. The dependent variable (Y) for each ANCOVA test were the specific continuous writing scores obtained after grading the participants' post-treatment writings, while the covariate (X) was the corresponding writing score obtained after grading the participants' pre-treatment writings. Thus, the five ANCOVA tests that were applied in order to answer quantitative Research Questions 1 through 5 were the following: (a) Question 1: T-unit ANCOVA with Y = post-treatment T-unit score, and X = pre-treatment T-unit score; (b) Question 2: idea unit mean length ANCOVA with Y = post-treatment idea unit mean length score, and X = pre-treatment idea unit mean length score; (c) Question 3: idea unit number ANCOVA with Y = post-treatment idea unit number score, and X = pre-treatment idea unit number score; (d) Question 4: lexical density ANCOVA with Y = post-treatment lexical density score, and X = pre-treatment lexical density score; and (e) Question 5: vocabulary complexity score ANCOVA with Y = post-treatment vocabulary complexity score, and X = pre-treatment vocabulary complexity score.

The use of the pre-treatment scores as covariates was expected to improve the accuracy of Y prediction in each of the ANCOVA tests (Glass & Hopkins, 1995). In ANCOVA, the average variance within groups, MS_w, was reduced to approximately $MS_W (1 - r_w^2)$, where r_w presents the within-group correlation between the Y and the X for

each ANCOVA test applied. The adjusted and unadjusted means of each group in each test was studied and reported in order to account for the credibility of ANCOVA findings: a considerable difference between the adjusted and unadjusted means affects the credibility of the ANCOVA (Glass & Hopkins, 1995).

Mann-Whitney U Test

The ordinal nature of the scores obtained with the multiple-trait rubric called for a different statistical analysis (Glass & Hopkins, 1995). These three ordinal scores, were analyzed applying three separate non-parametric two-tailed Mann-Whitney U tests. The Null Hypotheses for each of the tests were that there was no difference between the means of the two groups.

Pulled Score Analysis

The researcher took into account the fact that in this study multiple tests of variance were performed in order to answer the research questions. Thus, in order to avoid the high probability of inflating the Type I error (rejecting the H_o when it is true) for each statistical test a Dunn-Bonferroni-reduced α ($α_{ew}$) was used. The $α_{ew}$ value was calculated in the following way: $α_{ew} = α/P = .05/5 = .01$, where P (5) is the number of the tests in the study and .05 is the pre-specified Type I error probability (α) (Onwuegbuzie & Levin, 2005). However, the application of reduced α, required due to the application of multiple univariate tests, posed serious limitations to the study. When performing the five ANCOVA tests, the possibility of not finding statistically significant effects was high, even though if each of the analyses was performed separately or a fewer ANCOVA tests were conducted, at least one of the effects could be detected (Onwuegbuzie & Levin, 2005). In order to avoid this limitation, the Three-Step Approach for Testing Multiple

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Univariate Hypotheses proposed by Onwuegbuzie and Levin (2005) was applied. In the first step, each univariate hypothesis was tested for statistical significance. Then, the third step was applied for the statistically non-significant outcomes.

Onwuegbuzie and Levin (2005) suggest three different scenarios for Step 3. In this study, the univariate test of averaged standardized outcome variables described by them was applied. First, each of the eight outcome measure score was standardized (z-scores were calculated) making sure that the z-scores on each measure were similarly oriented (i.e., better performance was presented by lower z-scores). Then, the z-scores for each variable was summed and averaged across measures, thus yielding a composite z-score for each case. Further, an independent samples t-test of group mean difference was performed in order to compare the ACMC and SCMC groups in terms of the average composite measure. The Null Hypothesis tested was that there is no significant difference between the z-score means of the synchronous and the asynchronous groups.

Qualitative Data Analysis Procedures

The qualitative stage of the study followed a multiple-case exploratory study design (Yin, 2003). Two sub-stages were implemented: a group case study stage with 60 participants and an instrumental multiple case study sub-stage with eight participants identified based on their writing gains. The researcher described the educational setting based on the data collected from the non-student participants through informal interviews in the Qualitative stage, Step 1. Further, based on her observations and detailed narratives created immediately after each observation in the Qualitative stage, Step 2, the researcher described the writing class dynamics emphasizing students' participation in the computer laboratory session. The first two steps allowed for providing rich background of the

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educational settings in which the participants acquired their writing skills. Further, in Step 3 the researcher conducted CMC interviews with the 60 participants in the group case study and in Step 4, the researcher built eight individual instrumental case studies.

Sub-stage I: The Group Case Study

In the group case study, multiple sources of data were used. Data were obtained through (1) IEP documentation, (2) field observations, (3) CMC interviews with the participants, (4) participants' CMC interaction logs, and (5) post-treatments writings. In addition, the debriefing sessions with the non-student participants in the study further informed the researcher's understanding of the IEP documents, settings, and observed class interactions. These multiple sources allowed for collecting rich data from the approached educational setting and building the individual cases.

In the following sections of this chapter, the data sources and data analysis procedures supporting the answers of the research questions posed for the group case study stage are described. In order to answer *Research Question 1* which addressed the students' perceptions about CMC and its role for developing their writing skills, the researcher used as a primary data source students' interviews and was informed by secondary sources, namely, IEP documentation and CMC logs. *Research Question 2* inquired about the patterns of dyadic interactions used by language learners in CMC environments. In order to answer this research question, the primary source used was the CMC logs of participants' pre-writing interactions, the data analysis of this primary source was informed by secondary sources: IEP documentation, observations, and student interviews. Finally, in order to answer *Research Question 3*, which aimed to address the factors that influence the CMC interactions, four qualitative data sources were

considered. These sources include: (a) participants' CMC logs, (b) the field notes, (c)

interviews, and (d) non-student participant data. In the following sections of this chapter,

the procedures of data analysis are presented.

The IEP Documentation Analysis

The IEP documentation was used to provide a description of the educational

environment and situate the group case study into a specific setting and to inform the data

analysis and interpretations related to the research questions posed for this qualitative

stage. Further, this source of data informed the design of the educational tasks and refined

the focus the field observations. This source of data allowed the researcher to become

more familiar with the data collection setting and to preserve the naturalistic nature of the

study. Several documents were considered from this source: (a) Placement Test

Outcomes Reports, (b) Intermediate Level (III) Writing Class Goals and Objectives, (c)

the writing class textbook (Boardman & Frydenberg, 2002), and (d) the IEP CALL

curriculum.

The outcomes of the placement test used in the IEP (Appendix 1B & C) provided

a basis for purposeful selection of participants of the appropriate level of proficiency. The

first step was for the researcher to analyze the writing class goals and objectives

(Appendix 1 A) in order to assure that the goals of the research project do not contradict

with the overall goals and objectives of the study. The researcher then discussed the

research project goals and the writing goals and objectives with the non-student

participants, namely, the curriculum designer and the 2005 Fall semester writing teacher.

Further, the researcher reviewed the writing textbook selected by the IEP curriculum

designer to be used during the two semesters of data collection and in collaboration with

the Fall 2005 writing teacher created a tentative schedule according to which the various writing topics would be introduced to the class. This tentative schedule permitted planning for the individual stages of the study. Finally, the CALL curriculum (Appendix 2) provided information about the way computer skills were targeted in the IEP and how the computers were incorporated in the language learning process. After a careful study of this curriculum, the researcher who was also the CALL consultant for the IEP in the Fall semester of 2005 and the curriculum designer assured the consistency of the use of computers, as planned by the researcher with the CALL goals and objectives outlined in the CALL curriculum.

Field Observations Analysis

As outlined earlier in this chapter, field observations were conducted on a regular basis and mainly targeted the computer laboratory sessions of the writing class. The journal narratives, which were based on the field notes taken during the observations, were analyzed line by line by the researcher. The goal of this analysis was to highlight the general emergent themes which would focus the data analysis and presentation and would allow identifying and describing systematically the dynamics of the writing class settings. After these themes were identified and verified with the non-student participants, the researcher reviewed the narrative journal again identifying sub-themes related to each of the general themes. Following is a detailed description of the outlined above data analysis process.

The steps followed for data collection and analysis related to the class observations were: (1) creation of field observation notes during each observation, (2) transcribing and refining field observation notes immediately after each observation, (3)

debriefing the content of the field observation note transcriptions with the non-student participants on a regular basis, (4) refining field observation notes after the debriefing sessions, (5) creating narrative journals based on the observation notes for each individual session, (6) debriefing aspects of the journal narratives when needed with the non-student participants, (7) collapsing separate observation narratives into a narrative journal, (8) uploading the narrative journal to NVIVO, (9) identifying general themes, (10) identifying hierarchy of related sub-themes, (11) generating reports using NVIVO (v. 2.0) (Qualitative Solutions and Research Pty., 2001), (12) using the generated reports for each general theme and related sub-themes for writing the research report, and finally (13) debriefing the research report with a non-student participant. For the graphical representation of this process refer to figure 3.5.

Figure 3.5

Data Analysis Flowchart: Field Observations
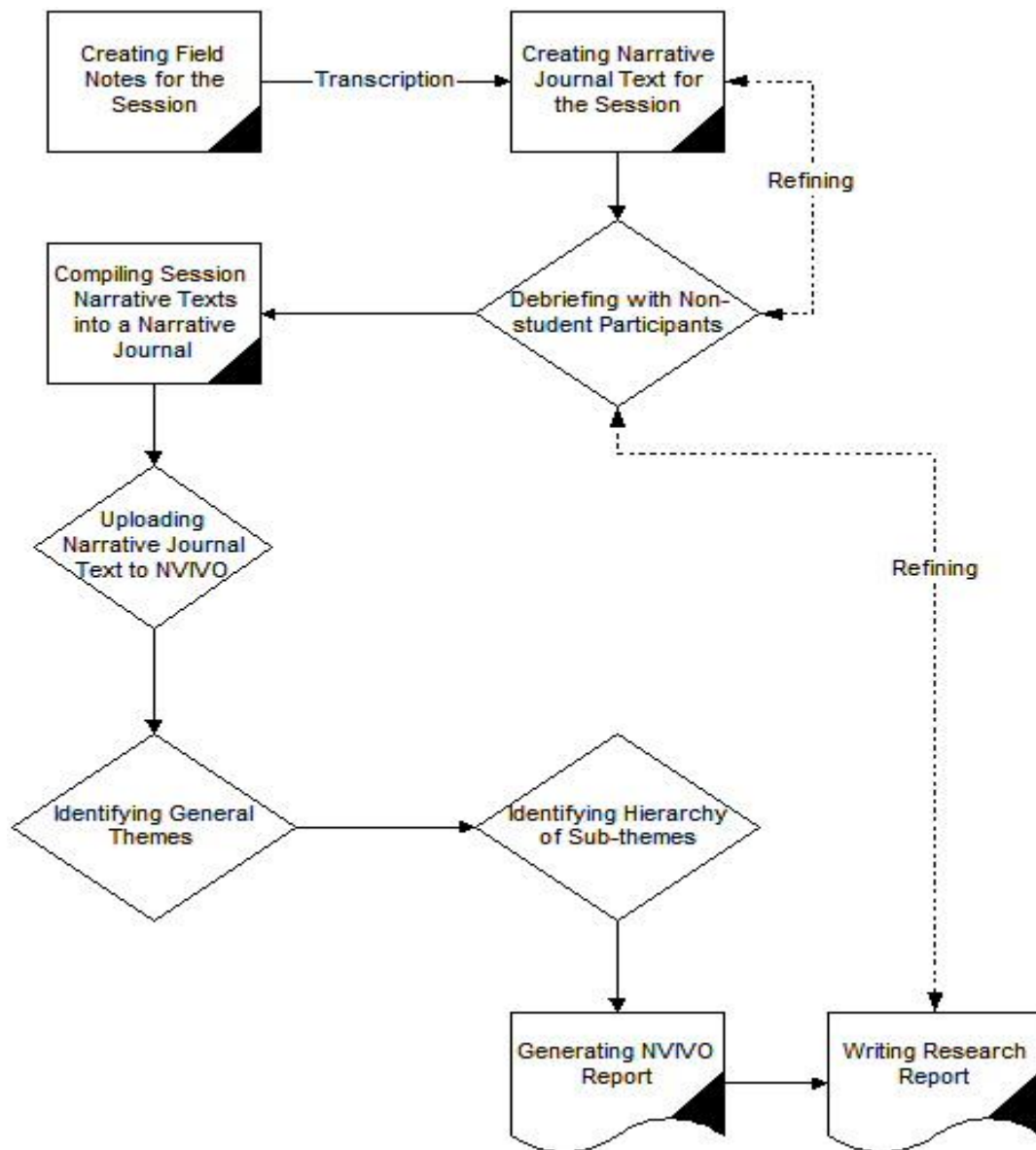
As it is evident from the Data Analysis Flowchart displayed above, the process of

the field observation data sources analysis was multistage and recursive. It took place

during the data collection period and was extended through the data analysis period. After

the field notes of each observation were transcribed, their discussion was part of the

regular debriefing meetings with the writing teachers and additional details or

clarifications, when necessary, were added. This process of recursive analysis and non-student participant member check assured the data credibility and conformability (Lincoln and Guba, 1985; Patton, 2002). Finally, after the composition of the research report, the report was discussed with the writing teacher who took part in both semesters in which data were collected in order to obtain a final member check of data report and interpretation.

The total number of lines in the narrative journal text was 1 187. In order to assure systematic analysis of the narrative journal text body which would allow the identification of the general themes and sub-themes as well as their relation, the analysis was performed using qualitative data analysis software NVIVO (v. 2.0) (Qualitative Solutions and Research Pty., 2001). The software allowed for marking the general themes and the identified sub-themes to the general themes. In addition, it allowed for marking portions of the narrative journal text to be used as illustrative examples, insert notes during the theme identification and create hierarchy of sub-themes related to the general theme which were later displayed in the reports generated by the software. For example one of the general themes *was working with software*. The following sub-themes related to this theme were identified: *use of ICA2, use of L.E.C.S., and use of Microsoft Word*. Further, for the first sub-theme level *use of ICA2*, supporting lower level sub-themes were identified: *ICA activities, student participation, student postings, and difficulties*. The ability to create such network of themes and display them in reports assured the systematic data analysis. A sample narrative journal report, generated after NVIVO (v. 2.0) (Qualitative Solutions and Research Pty., 2001) analysis is provided in Appendix 6.

The Treatment CMC Interactions Analysis

The CMC interactions of the participants during the completion of the pre-writing CMC discussion task served as a primary data source for answering *Research Question 2*: What patterns of dyadic interaction do participants manifest during the asynchronous and synchronous CMC interaction process? The pre-writing CMC interactions of each dyad were available at the servers hosting the applications used for the CMC interaction: ICA2 (Nicenet, 1998) and L.E.C.S. (Kanto Gakuin School Corporation, n.d.). In order to identify the dyadic interaction pattern types and how they were influenced by the CMC interaction factors, the researcher analyzed the CMC log generated during students' pre-writing exchange. The model for used pattern identification and analysis was the model of dyadic interaction proposed by Storch (2002).

Storch (2002) propose the following patterns of dyadic interactions of second language learners': *dominant, passive, novice, expert, collaborator*. These patterns, according to the Storch's model are determined based on two continuums: that of mutuality and equality of interaction (the graphical representation of the model is provided in Figure 4.1). *Dominant* is a pattern of interaction in which a person takes an authoritarian stance and appropriates the task. The *passive* pattern refers to interaction in which the participant has limited contribution to the discussion due to choosing to play a more passive role in the interaction process. The *novice* pattern is evident when an *expert* pattern takes place in the same interaction – there is a sense of encouragement and collaboration between the participants with one of them being a leader. The *collaborator* pattern is evident in interaction situations in which there is equality in the process of task completion and both participants work together through all stages of the task.

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The total of 30 CMC interaction logs (17 ACMC and 13 SCMC) were analyzed in order to identify the dyadic interaction for each case. The analysis was performed line by line for each dyad log. The evidences for stances of interaction that would specify each participant's pattern of interaction were identified. The stances of interaction considered in the data analysis are presented in Table 3.3.

Table 3.3

Stances of Interaction Sorted by Dyadic Pattern

Dyad Pattern Type	Dyad Interaction Stance
Expert	- more control; encourages the novice; offers assistance
Novice	- confirms experts' position, repeats after Expert, little contribution
Collaborative/Collaborative	- work together on all parts; joined problem space; alternative views offered and discussed; willing to engage with each other's ideas; leading resolutions acceptable for both partners; cohesion of interaction (repeat & extend); negative & positive feedback
Dominant	- Authoritarian; appropriates the task; long monologues; little attention to the other's contribution; speech directed to the self; little assistance offered
Passive	- passive and/or subservient; fewer contributions or challenges; does not propose challenges; little assistance sought
Dominant/Dominant	- both contribute to the discussion; inability to engage with each other's contribution; inability to reach consensus; division of labor; few requests or collaborative completions

In order to assure the credibility, dependability, and confirmability of the qualitative data, the researcher analyzed each interaction four times in a period of two weeks. The third and the fourth time of data analysis resulted in 100% intrarater agreement in terms of dyadic pattern identification. Further, 12 of the CMC logs (40%) were analyzed by two independent raters. The agreement with both raters the level agreement was high – 98% with rater one and 100% with rater two. The CMC logs analyzed for patterns of interactions were used to initiate the partially ordered matrix for each case (Miles & Huberman, 1994). This matrix was further developed considering other sources of data presented in this chapter. The fields of the matrix are presented in Table 3.4.

Table 3.4

Partially Ordered Matrix Fields: Group Case Study

Participant	CMC Mode	Pulled z-score	Age	Gender	Education	Interaction Pattern	Partner's Interaction Pattern	Interview Trend 1	Interview Trend 2
1	ACMC	-0.02	25	M	College	Collaborator	Collaborator	Theme 1	Theme 1 & 2
2	SCMC	0.08	19	F	College	Dominant	Dominant	Theme 2	Theme 2

CMC Student Interviews

The student ACMC interviews collected during the on-going qualitative stage used as a medium of communication ICA2. The logs of the 18 interview questions and answers were available for each of the participant. The questions were grouped in a way so one group of several questions would reveal students' opinions about or experiences with a specific trend. An example of such trend could be *views on writing*; this trend was addressed in questions 5, 6, and 7 (refer to Table 3.2 for question types and trends representation). Within the trends, the themes that emerged in the interview data were identified and the research report presented in Chapter IV was organized.

For the purposes of data organization and analysis, the interviews were collapsed in one document. NVIVO (v. 2.0) software (Qualitative Solutions and Research Pty., 2001) was used for the data analysis. The following steps were undertaken: (1) each individual log was analyzed within the proposed trends and the emergent themes for each interview trend were identified, (2) the themes were refined using the tree nod feature of NVIVO (v. 2.0), (3) interview report for each case was generated, and (4) the partially ordered matrix initiated during the Dyadic pattern of interaction analysis was further developed using the interview trends and themes.

Thus, the partially ordered matrix contained the data analysis results pertaining to (1) the dyadic pattern of interaction exercised by each participant during the treatment CMC pre-writing interaction, and (2) the interview trends and the emerged themes. The matrix was further extended including (3) demographic data for each participant: age, gender, and education, (4) the CMC mode of interaction of each participant, and (5) the pulled z-score difference between the pre-treatments and the post-treatments writings

were included. Table 3.4 presents the fields of the partially ordered matrix, note that the interview trends are marked as Trend 1 or 2; the full list of trends is presented in Table 3.2. These trends were used to organize and present the Computer Interview Outcomes section in Chapter IV. The partially ordered matrix was created using Excel spreadsheet (Microsoft ® Office Excel ®, 2007) which allowed to manipulate the matrix horizontal and vertical fields during the data analysis. The researcher strived to move from lower-level concepts presented by the themes for each of the trends to higher-level theorizing. In order to achieve this higher-level theorizing, the comparisons of the emerging themes were applied systematically for each participant and across all participants in the group case study (Patton, 2002).

Sub-stage II: The Instrumental Case Studies

This section presents the steps undertaken for data analysis of the instrumental case studies, a detailed description of the analysis process for each case is provided in Chapter V. For the individual instrumental case studies, after the qualitative participants were identified upon the quantitative and qualitative stage data analysis, the eight individual cases were selected based on the pulled z-scores obtained during the quantitative data analysis. As stated earlier in this chapter, Extreme/Deviant sampling technique was applied (Kemper et.al., 2003). This technique allowed the identification of the extreme cases in the study.

The actors of these cases were the students who gained the most and the least in terms of writing skills demonstrated in their first paragraph drafts written after a CMC pre-writing discussion (treatment) as compared to the pre-treatment draft written after a face-to-face pre-writing interaction. Eight high- and low-gain actors were selected, two of

each gain level and CMC mode of pre-writing interaction. The researcher analyzed the CMC pre-writing interaction logs and the first drafts of the case study participants; the goal was to identify the interaction patterns they demonstrated and link those patterns to the intertextual connections between the logs and the first drafts produced by the participants. Further in this section the specific steps of data analysis are described; the graphic representation of these steps is provided in Figure 3.6. The analysis aimed to answer the research questions posed for this sub-stage of the study: *Research Question 1:* How do peers participate in asynchronous and synchronous pre-writing CMC interactions? *Research Question 2:* (a) How do they use the specific ideas and language generated during these interactions in their writings? (b) What are the differences and similarities in the implementation of these ideas?

In order to assure the credibility, dependability, and confirmability of the data analysis the researcher reviewed the identified themes and intertextual connections several times refining the analysis. The last two review rounds resulted in 100% intrarater agreement; in other words, in the last round no changes were made to the data analysis as performed in the previous round. Further, a trained interrater reviewed the analyzed data confirming that the themes and intertextual connections identified by the researcher. High inter-rater agreement was achieved.

Figure 3.6

Data Analysis Flowchart: Instrumental Case-studies
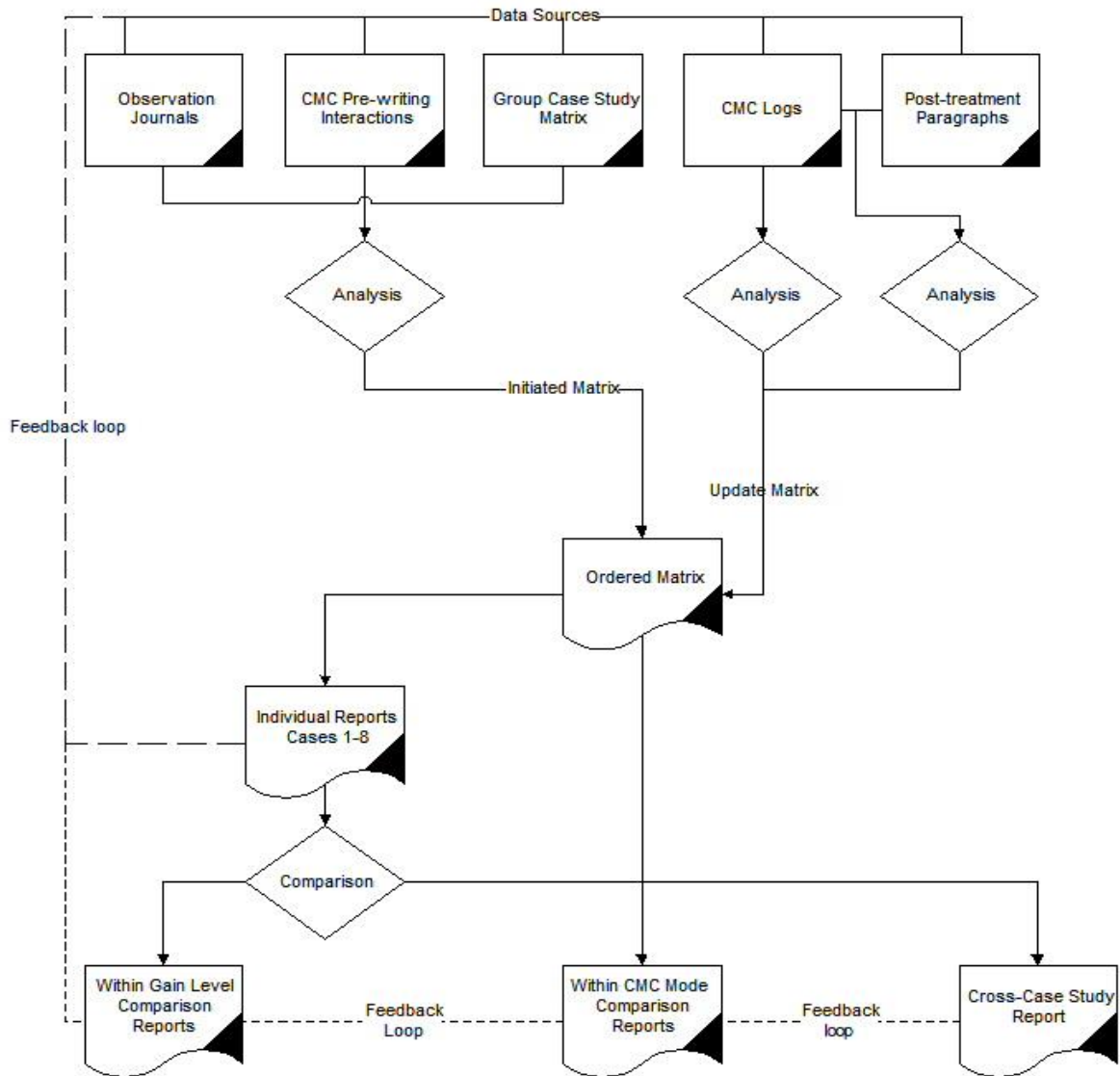
Analysis of observation narratives and interview records

In order to elicit data related to the targeted case studies, the researcher first examined the observation journal narratives and pulled out the sections which pertained to the actors of the instrumental case studies. These observation data were analyzed using NVIVO (v. 2.0) software (Qualitative Solutions and Research Pty., 2001) in order to

identify aspects that would support the presentation of the actor. NVIVO reports were generated. Further, the participant record of each actor was pulled from the partially ordered matrix created during the *Sub-stage I: Group Case Study*. The interview themes identified in the matrix were examined. The third step was to relate these themes with the overall body of observation data and further examine the themes within the context of the full text of each actor's interview. This recursive analysis of the interview themes allowed for providing richer context within which actors' views on writing and CMC were presented. An ordered matrix was initiated based on the outcomes of this data analysis (Appendix 11).

The CMC Interactions Analysis

The next phase of the instrumental case study data analysis entailed the CMC logs generated during the pre-writing task as a primary source of data. The CMC log of each individual actor was analyzed in order to identify the descriptive characteristics of the CMC pre-writing exchange. Another goal was to illustrate each actor's dyadic pattern of interaction identified during *Sub-stage I* and explain it within the context of the overall interaction accounting for partner's pattern, number, content, and length of postings, and views related to the CMC interaction task as shared in the interview. This analysis resulted in the identification of concrete themes related to the specific aspects of the interaction. These aspects were: (1) number of posted messages, (2) length of postings, (3) actor's dyadic patterns of interaction and its interpretation, (4) partner's dyadic patterns of interaction and its interpretation, (5) actor's views on the interaction and the task as shared during the interviews with the researcher. Considering these aspects, the ordered matrix was extended with additional fields.

The Paragraph Intertextuality Analysis

Each actor's paragraph was analyzed and compared with the pre-writing interaction in which the actor and his/her partner participated during the pre-writing stage. The comparative analysis of the paragraph and the pre-writing log was performed line by line. The intertextual analysis for each of the cases was performed on three separate levels. These levels included: (1) lexical level, (2) organizational level, and (3) textual level, with idea units being used as a unit of analysis.

The intertextuality on a lexical level was analyzed based on the matching distinct lexical item (DLI) scores obtained during the quantitative stage of the study. For the purposes of the analysis, the following definition of DLI was used: the same lexical items which appeared one or more times in either the CMC interaction or the post-treatment paragraph were considered to present one DLI. The matching DLI sores represented the lexical items that were used both in the pre-writing discussion and the following it draft. The consideration of the DLI scores obtained by the 60 participants in the *Qualitative Sub-stage I* and quantitative stage of the study allowed the researcher to make suggestions about the strength of the pre-writing discussion and the post-treatment paragraph connections on a lexical level for each of the instrumental case study actor as compared to each other and to the overall language learning community of which this actor was a member.

The organizational level analysis was conducted through line by line comparison of the texts of the CMC interaction log and the draft produced after this interaction. The comparison aimed to reveal the connections of the pre-writing discussion organizational suggestions to the draft organization. In addition, the analysis accounted for the

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sequencing of ideas in the CMC discussion and whether the same or similar sequence was evident in the draft. This analysis allowed the researcher to suggest possible connections between the pre-writing discussion and the post-treatment paragraphs on an organizational level.

Finally, the textual (idea unit) level analysis of intertextuality was performed through segmenting the pre-writing discussion texts and the post-treatment writing into idea units. The following working definition of an idea unit was used in the analysis: an idea unit is a separate clause "it contains one verb phrase along with whatever noun phrases, prepositional phrases, adverbs, and so on are appropriate" (Chafe, 1985, p. 106); however, if a complement or restrictive relative clause is present or indirect question or indirect quotation is used, these belong to the idea unit presented by the main clause. Dependent clauses, appositives (including examples provided by the writer, i.e. "*for example: New York, Houston, Los Angeles*"...), and participial clauses (past and gerund) were considered to be separate idea units. When analyzing CMC discourse production, single phrases indicating agreement, disagreement, understanding, etc. were considered as separate idea units – for example: "Thank you!" "Yes," an emoticon, etc. Each idea unit from the pre-writing discussions was compared against the idea units from the draft texts. The intertextual connections between the discussion and draft idea units were interpreted and new idea units composed in the draft were identified.

During the analysis of the intertextual connections, the ordered matrix was further developed. This matrix was created using Excel spreadsheet (Microsoft ® Office Excel ®, 2007) which allowed to manipulate the matrix horizontal and vertical fields during the data analysis.

Comparing the Instrumental Cases

The final step of the data analysis was to compare the cases accounting for the identified themes, interaction patterns, and intertextual connections. This comparison was performed first within each CMC mode/gain level dyad, then within each CMC group. Finally, a cross-case comparison was performed. The partially ordered matrix allowed the researcher to have easy access to the data analysis outcomes in the process of describing each case. Further, the ability provided by the Excel spreadsheet (Microsoft ® Office Excel ®, 2007) to sort the data both horizontally or vertically eased the process of cross-case comparison.

Combining the Quantitative and Qualitative Analysis

The results of the quantitative stage of the study were considered during the qualitative stage of the study in order to support the multiple-case analysis. In addition, the analyses of the qualitative and quantitative data revealed new aspects of the studied phenomenon which prompted the researcher to extend the quantitative stage with additional analysis. This additional analysis is addressed in detail in the following chapter.

Thus, the quantitative and the qualitative findings complemented the discussion by providing information about trends in writing skills acquisition demonstrated in the first drafts of the students' writings. This allowed for the qualitative stage of the study to be situated within a richer context through offering multiple dimensions to the description of the writing skills acquisition processes and provision of a richer basis for data presentation and conceptualization. This in turn supported the researcher to accomplish a higher level of theorizing based on the overall findings of the study.

Chapter Summary

This chapter presented a description of the study design, flow, and data analysis procedures. Reasons for applying sequential mixed method design were provided, and justification for combining qualitative and quantitative techniques was discussed. The instruments used in both stages were described along with the role of the researcher in the study. The quantitative and qualitative data analysis procedures used in the study were described in order to explain how the different sources of qualitative and quantitative data were approached.

CHAPTER IV: THE GROUP CASE STUDY STAGE AND THE QUANTITATIVE

STAGE – ANALYSES AND   RESULTS

Introduction

This study aims to investigate intermediate-level ESL learners' composition process from the perspective of the Writing-as-a-process approach. More specifically, the processes that occur during the first two pre-writing stages of the five-stage process: the pre-writing and drafting stage (Grabe & Kaplan, 1996) were in the focus of the investigation. The analysis accounted for the social factors such as learning and task completion environment, participants' backgrounds, and views on writing and the pre-writing task, as well as for certain deep- and surface-textual features as presented in Grabe's and Kaplan's model (1996). In addition, in the study the social interactions of the students were examined, this examination was informed by socio-cultural theory, more specifically the dyadic interactions of the participants were examined within the context of the model of dyadic interaction proposed by Storch (2002).

In this chapter, the results of the qualitative and quantitative data analysis are addressed and discussed. The qualitative data were collected during the pre- and post-quantitative stage of the study as well as during the nested quantitative stage, more specifically during the treatment. The quantitative data were collected during the nested quantitative stage, more specifically during the pre-treatment, treatment, and post-treatment sessions.

In the first section of the chapter *Qualitative Analysis: Sub-stage I*, the computer laboratory sessions are presented and discussed. Further, the CMC treatment pre-writing discussions are presented in the context of interaction patterns. The last qualitative section outlines the outcomes of the CMC interviews conducted during the semester. A discussion of the qualitative data analysis outcomes is presented at the end of the Qualitative analysis section. The goal of these sections is to build a background within which the results of the quantitative stage and the instrumental case studies, discussed in Chapter V, are presented, as well as to answer qualitative questions 1-3 which were: (1) What are the students' perceptions of the role of CMC in the process of establishing their writing skills? (2) What patterns of dyadic interaction do participants manifest during the asynchronous and synchronous CMC interaction process? (3) What are the factors that influence the CMC pre-writing interaction process? How do these factors influence the interaction process?

In the subsequent section of this chapter, the results of the nested quantitative stage are provided. Further, the research questions posed for the nested quantitative part are answered and discussed. Finally, the additional findings of the research are presented. First, the additional quantitative research question along with the methodology for this additional textual analysis are described. Next, the results of the textual analysis are presented within the context of the overall nested quantitative section. The chapter is concluded with the discussion of the overall findings.

Qualitative Data Analysis: Sub-stage I

Computer Laboratory Sessions: Behavioral Patterns and Class Dynamics

The student behavior and class dynamics of the computer laboratory writing class sessions were observed, and these observations were documented. During 14 sessions of the fall semester of 2005 and eight sessions of the spring semester of 2006, the researcher assumed the role of observer. A detailed observation journal was kept; the notes from this journal were subsequently analyzed. When analyzing the computer laboratory observations notes, the following general themes emerged: (1) Class dynamics, (2) Class Management Issues, (3) Task Completion, and (4) Working with Software.

Class Dynamics

The two sections of the Level III Writing class whose face-to-face interaction was closely observed during Fall 2005 had distinctly different dynamics in their regular classes which were transferred to the computer laboratory class. One of the sections was composed mostly of continuing students; they had an excellent relationship with one another even prior to the beginning of the Fall 2006 semester. The writing instructor, who was also their teacher during the preceding summer semester, stated "they are like family" (debriefing session); she further stated that they supported each other both in class and outside of class. This was also evident from the researcher's observations. Thirteen instances of clear positive attitude demonstrated by students were identified in the observation notes; they included various behavioral trends that indicated motivation, readiness to work, and positive attitude towards the writing class.

Students were energetic and expressed their readiness to work in the beginning of many of the computer laboratory sessions observed. They were mostly relaxed during the

class sessions. The low anxiety was demonstrated by active participation when teacher-student discussion was involved, mostly in the beginning of the computer laboratory sessions. The students were active in providing their opinion when class discussions were held, they were not reluctant to ask questions and request assistance when they needed it. In addition, they quickly accepted the new student in the section and made her feel part of the group starting with the first computer class session observed.

However, in this section, a few instances of students experiencing stress were observed. In the beginning of the semester, the new student expressed reluctance to participate in the assigned task which involved posting a reply to the welcome message of the teacher using ICA2. Although she demonstrated good computer skills in terms of Internet navigation and typing, she was reluctant to proceed with the task. She asked the teacher about the purpose of registering to ICA2. Almost immediately, one of the continuing students who was familiar with the courseware volunteered to guide her through the first steps of the task. Another student demonstrated stress during the treatment timed-writing session and had difficulties completing the assignment. He spent the majority of the time composing his first sentence. However, he was not reluctant to ask for the teacher's assistance: during the second half of the session, he called the teacher and told her that he cannot organize his ideas. Due to the fact that this was the controlled post-treatment writing session, the teacher did not provide him with specific help but reminded him about the requirements of the task.

Another trend that the researcher noticed in the class dynamics during computer laboratory face-to-face discussions was that some of the students in the class would lose their attention focus during class discussions. This behavior was observed when the

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discussion took place immediately before an assigned writing task. Some of the students would attempt to start using the computer before the task was fully presented; others would start reviewing the notes they took previously in the face-to-face class sessions; still others simply would not participate in the discussion and would attempt to open websites not related to the task.

Compared to the first section, the students of the second section of the Fall 2005 Level III Writing class appeared more alienated. This was evident by their behavior during face-to-face classes and transferred to the dynamics of the computer laboratory sessions. This observation was confirmed by their writing instructor as well. During a debriefing session, the teacher shared with the researcher that, in the beginning of the third week of classes, there was a loud argument between two of the male students in the class; these men did not talk to each other for the rest of the semester. Two of the six young men in the group were mostly communicating with each other during the breaks between classes; they seemed not to care about the other students in the class. Usually, before computer lab class sessions, the male students would sit in front of their computers either browsing the Internet, listening to music or chatting with friends from their countries. The women formed two distinct groups that would be together during the breaks.

During the short class discussion sessions in the computer class, there were several students who volunteered their answers; however, they mostly addressed the teacher, rather than engage in an exchange with one another. Typically, the students of this section were mostly quiet during these discussions and waited for the teacher to call on them. There was only one note in the researcher's computer class observation journal

that depicted a more lively contribution to a class discussion of two students when one volunteered an answer, and this answer was supported and further extended by another student. There were instances when some of the students openly expressed boredom or frustration during task completion: they would attempt to access sites not related to the task, to listen to music using the computer or a portable MP3 players, or demonstratively abandoning the task pushing aside the keyboard and staring in front of them.

The researcher did not notice the same strong contrasts between the sections of Lever III during the Spring 2006 semester. One of the reasons for this might be that there were fewer class sessions in which the researcher was involved only as an observer. However, none of the writing instructors indicated that there was an exceptional closeness or alienation in their sections. In addition, for the majority of the students this was their first semester at the IEP; there was a large group of students from the same country who knew each other before coming to the program. These students tended to stay together most of the time.

Class Management

The class management in a computer laboratory class had its own specifics related to the fact that for the majority of the tasks, the computer was the main instrument. In the Spring semester of 2006, the computer laboratory sessions took place in two different computer laboratories. In the small computer laboratory used in the Spring 2006 semester, the computers were was set up in a way that the monitors were hiding the students from the instructor's desk which was positioned in the front of the class. It is possible that this setting created a sense of privacy and limited the ability of the instructor to observe the actions of the computer users. Although the computers in the large

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computer class were set up in a way so the monitor screens did not hide the students from the teacher, students also seemed to feel their working places in the computer laboratory more private as compared to a regular classroom, this assumption was based on the observations of more frequent attempts to engage in activities not directly related to the assigned task. More specifically, the researcher identified five behavioral trends related to class management during different computer laboratory classes: (1) multitasking using either an instant messenger or an Internet site, (2) keeping portable MP3 players or computer headphones on during task completion, (3) beginning the work on the computer preliminarily, (4) taking notes using Microsoft Word when the teacher explicitly asked to close all computer applications, (5) temporary or permanent abandonment of assigned task. These trends were observed during the work of different sections of the writing class and were confirmed by the instructors as well.

There were multiple attempts of multitasking during the computer laboratory classes which mostly involved using chat software and Internet sites not related to the class activities. While most of the students would close their extraneous windows on the computer once the instructor requested this, others would simply minimize them or hide the bottom task bar so the minimized windows were not visible unless the cursor was positioned in the bottom area of the screen. The researcher documented nine specific instances of such behavior in her observation journals; this behavior was noticed by the instructors as well, and an explicit policy that would forbid the use of unrelated websites during the computer laboratory class sessions was stated by each of the four instructors teaching the writing class during the Fall 2005 and Spring 2006 semesters.

In addition to browsing Internet sources not related to the assigned activities, there were three students who would routinely stay with i-pod or computer headphones on during task completion and sometimes even during class discussion. This behavior was repeated during several computer laboratory sessions. When the instructor asked the students to take the headphones off, they would comply with the request; however, they would attempt this behavior again in subsequent computer laboratory sessions. Interestingly, this was a trend observed only in the section of the Fall 2005 writing class in which the students had alienated relationships.

The researcher noted seven specific instances when students would start working on a writing task before the task was fully presented by the instructor and discussed with the class. During these class discussions, students also attempted to take notes using Microsoft Word, although the instructors discouraged this; three of the observed students used Microsoft Word for note-taking, and all of them had strong typing skills.

Finally, it was observed that some students abandoned the assigned task or hurried to complete it. There were eleven specific instances of such behavior documented by the researcher. Five of these instances were observed: one during a small group discussion and four during class discussion. The researcher contributed this higher number of preliminary task completion or task abandonment during class discussion to the way the computers were positioned in the laboratory partially hiding the students from the instructor as well as to students' eagerness to proceed with accessing files and applications not related to the task. Further, in one case, during individual work on the computer, the task was temporarily abandoned because the student did not know how to perform an action on the computer that would take him to the assigned online material.

He had difficulties positioning the cursor exactly on the link posted on ICA2, and after multiple attempts quit trying but did not request assistance. In four instances, during individual task completion, the students shifted to a software application that was not related to the task (Instant Messenger, the Internet, Microsoft Word, and Windows Sound recorder); two students engaged the teacher in a conversation not related to the writing class prior to beginning work on the task or during the task completion; two students abandoned a writing task for which the teacher did not request submission at the end of the class. When asked why they stopped writing, both answered that they would complete the task later. Even though speculating if the task was fully completed is difficult, in three of the observed instances of preliminary task abandonment, the researcher checked students' work and concluded that it was not finished or little effort had been applied and the task outcomes were not revised.

Working with Software

During the pre-quantitative stage of the study, the students were trained to use two software applications: ICA2 and L.E.C.S. These applications were used for the completion of the treatment task. In addition, students worked extensively with Microsoft Word to compose and format their writings. In order to assure that the participants would become familiar with these applications and that they would get the necessary online communication skills, several activities that incorporated these applications were assigned during the pre-quantitative stage. The trends demonstrated during the completion of these activities were observed and analyzed by the researcher.

ICA. When working with ICA2, students generally experienced very few problems. In addition to the user-friendly design of the application, the reason for the fast acquisition of this courseware functions could be attributed to the fact that this application was used in other classes as well for the reason that it was the suggested courseware at the IEP. However, there were several trends that were observed as students were working with ICA2.

One of the first activities performed on ICA2 included exploring web resources related to language learning; the links to these resources were posted by the teacher in the Link Sharing section of ICA2. The second part of the task was for the students to post links that they had found useful. None of the students posted their own links. In informal conversation, three students shared that the reason they did not post was that they did not have the time – they found the sources posted by the teacher to be very interesting, and they spent most of the time reading them, which left them with very little or no time to search for other links. In addition, they were not sure that they could find language learning sources on the Internet of the same quality as the ones provided by the instructor.

Multiple tasks required students to post on the conference section of ICA2. The researcher observed that the students would type their postings directly into the application although ICA2 does not offer spell checking and the students at this level have significant difficulties with spelling. This difficulty was also confirmed by the interview outcomes: students reported spelling to be one of the difficulties they face when writing in English. Only one of the observed students used Microsoft Word to compose her posting and then copied and pasted it into the ICA2 conferencing section.

Out of the 103 students enrolled in the writing classes during the Fall 2005 and Spring 2006 semesters, only three were observed to experience difficulties navigating through ICA2 after the initial training was completed. Two of them had difficulties finding the resources links posted on the Link Sharing section; the third one had difficulties opening links posted on the Link Sharing section. Another minor difficulty was that initially students would not fill in all the registration information when signing into ICA2 for the first time. This left them appearing as "anonymous" in the class list and in their postings. This problem was identified and addressed by the teachers.

L.E.C.S. The students completed several synchronous communication assignments using L.E.C.S. The majority of the questions asked by the students during the completion of these assignments were related to language and vocabulary. In the first class that used L.E.C.S., there were two occasions of students not being able to start their synchronous communication on L.E.C.S. because they did not post in the same L.E.C.S. chat group. This problem was related to the way the L.E.C.S. functions for creating chat groups were set up: each group was automatically assigned a consecutive number, and there was no function to add students' names to the group number. This was taken into account when providing instructions for chat group access for the other writing sections and especially during the treatment task completion. In addition to the above, during the pre-quantitative stage, the researcher documented one instance of students assigned to the same chat dyad to attempt communicating face-to-face after they realized that they were sitting close to each other. When asked at the end of the class for the reasons for attempting to talk to each other rather than to chat during the task completion, the students said that it took them too long to type their responses. Although these two

students had relatively good typing skills (2.5 and 2 on a 3-point scale), they perceived it to be time-consuming to complete the task through chat discussion. This theme emerged again in the student interviews: when sharing their opinions about the treatment pre-writing CMC task, four students explicitly stated that CMC is time consuming.

Another trend related to typing was that students would be impatient while waiting for their partner's postings. Two instances of complaints to the teacher about slow posting were documented by the researcher during the pre-quantitative stage. Other students chose to multitask, switching between the chat window and a website not related to the chat. During the pre-quantitative stage, three people were observed multitasking; however, the researcher believes that this number might be higher considering that multitasking was one of the class management issues observed by the researcher and shared by the teachers.

Microsoft Word. While most of the students were familiar with Microsoft Word and had at least beginning typing skills, there were two students, one who was enrolled in the fall of 2005 and the other in spring 2006 who, in addition to their very limited computer skills, had no experience working with text-processing applications. However, these students progressed relatively quickly with their computer skills due to the intensive exposure to computers at the IEP: most of the classes at the IEP have at least one computer laboratory session per week.

The researcher noticed that most of the students would prefer writing by hand rather than on the computer, if they had the choice. If the writing task was assigned to be completed on a computer, students would draft their writings by hand and then start working on a Word document. This could be an indicator of their perception of the

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computer as a tool used in more advanced stages of the writing process. Students would prefer printing texts they were assigned to read and edit or paraphrase, rather than working with the texts directly on the computer. However, three students were observed to attempt using Microsoft Word for note taking during the very few and short teacher-centered presentation in the computer class. All of these students were proficient in their use of Microsoft Word. The function of Microsoft Word that students were observed to use the most was spell checking, several of them used the Microsoft Word Thesaurus, and one was observed to use word count. These observations were confirmed by the interview outcomes as well: the Microsoft Word features most frequently reported to be used during the post-treatment task were spell check followed by Thesaurus. All of them were expected to format their texts using functions of Microsoft Word related to formatting.

When working with computers the students demonstrated different levels of computer skills. Some of the students were more proficient and had considerable experience using computers while others (fewer) had to start developing their computer skills at the IEP. Based on the observations conducted during the pre-quantitative stage, the researcher concluded that the less computer-skills proficient students were forming their computer skills quickly during the first weeks of the semester. By the fifth week of the semester, when the study experiment took place, they were familiar and worked comfortably with the three applications used in the study: ICA2, L.E.C.S., and Microsoft Word.

The Treatment CMC Interactions

CMC Discussions: Specifics

The CMC pre-writing discussions were examined and the outcomes of the discussions performed in the two modes of CMC were compared in terms of language produced and patterns of interactions used in these discussions. The following descriptive characteristics of language specifics were examined: (1) number of turns, (2) mean length of turns, (3) length of discussions measured with average number of total words, (4) number of distinct lexical items (DLIs), (5) mean length of word strings between end of sentence punctuation.

Descriptive characteristics of CMC interactions. When examining the CMC discussions, it was noted that the CMC interaction that took place during the pre-writing discussion differed in several ways depending on the CMC mode. It could be inferred that the synchronous communication in general was more interactive than the asynchronous. The SCMC discussions were more dynamic and involved the generation of more language with a higher number of partner turns and distinct lexical items used by the partners.

The texts produced during the SCMC discussions were generally longer: the SCMC discussion mean length was 410.46 words, while the ACMC was 272.76 words. In the SCMC discussions, students used more distinct lexical items (DLIs) – the mean number of DLIs was 92.15 as compared to the ACMC discussions which had mean number of 66.24 DLIs. However, the sentences produced during the ACMC discussions were easier to detect due to more consistent use of end of sentence punctuation and

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complete sentences, while the SCMC group used more utterances consisting of phrases or incomplete sentences and the punctuation was often irregular.

The average length of word strings between end-of-sentence punctuation marks or end-of-posting were computed. This computation revealed that the ACMC group used longer strings of words between end-of-sentence punctuation marks or end of posting, with an average of 12.66 words, whereas the number of words in the SCMC discussion utterances, signified by end-of-sentence punctuation (period, exclamation or question mark, three dots) or end-of-posting (without a punctuation mark), was 6.92 words. In addition, the exchange of students who participated in ACMC and SCMC discussions differed by the number of postings. For the ACMC discussion, the mean number of postings was 5 per dyadic interaction while in the SCMC discussion it was much higher – 46.46.

As compared to the SCMC, ACMC postings used longer chunks of text. The average length of ACMC postings was 54.98 words per turn, whereas the average length of the SCMC postings was 8.85 words. The sentences in the ACMC postings were mostly organized in short sequences that sometimes resembled paragraphs presenting a topic sentence and supporting ideas and other times were ideas outlines often formulated in complete sentences and presenting the topic, the controlling idea, and supporting ideas for the paragraph, while the SCMC participants did not organize their ideas in a paragraph-like or outline formats. Thus, the pre-writing discussions, when performed in ACMC mode, shared characteristics with outlining and producing a first draft, while the pre-writing discussions performed in an SCMC mode tended to concentrate on generation

of ideas related to the writing topic. Table 4.1 presents the descriptive statistics of ACMC and the SCMC discussions outlined above.

Table 4.1

Pre-writing Discussion per Dyadic Interaction: Descriptive Statistics

	n	Mean Number of Turns	Mean Length of Turns	Mean Number of Words	Mean Number of DLIs	Mean Length of Sentence
ACMC	17	5	54.98	272.76	66.23	12.66
SCMC	13	46.46	8.85	410.46	92.15	6.92

Patterns of Dyadic Interactions

The dyadic interactions were examined in order to determine the specifics of the interaction patterns for each group. The researcher used the model of dyadic interaction proposed by Storch (2002). This model was discussed in detail in Chapter 3. Whereas Storch created and described the model within the context of face-to-face dyadic interactions, in this study it was applied to CMC dyadic interactions. The researcher found some similarities as well as differences between the dyadic patterns of interaction in face-to-face environments reported by Storch (2002) and the CMC interaction patterns. The modified model along with the main indicators manifested in each pattern of interaction in the CMC environment is presented in Figure 4.1 and discussed further.

Figure 4.1

Dyadic Interaction and CMC Patterns Indicators, modified from Storch (2002)

<div align="center">High Mutuality</div>

Expert — more control — encourages the novice — offers assistance	**Novice** - confirms experts' position - repeats - little contribution	**Collaborative/Collaborative** - work together on all parts - joined problem space - alternative views offered and discussed - willing to engage with each other's ideas - leading resolutions acceptable for both partners - cohesion of interaction (repeat & extend) - Negative & positive feedback
Dominant - authoritarian - appropriates the task - long monologues - little attention to the other's contribution - speech directed to the self - little assistance offered	**Passive** - passive and/or subservient - fewer contributions or challenges - does not propose challenges - little assistance sought	**Dominant/Dominant** - both contribute - inability to engage with each other's contribution - inability to reach consensus - division of labor - few requests or collaborative completions

Left axis: **Low Equality**   *Right axis:* **High Equality**

<div align="center">Low mutuality</div>

During the data analysis, the interaction types outlined in Storch's model (2002) were considered and identified. The most dominant trend of interaction observed was the high mutuality and high equality trend which led to a collaborative pattern of interaction. A total of 12 pairs demonstrated this trend as the main trend of interaction. Whilst this

type of interaction was predominant in the SCMC discussion with nine out of 13 pairs

using mainly collaborative interactions (69.23%), for the ACMC discussion it was a

much less prevalent type of interaction: only for three out of 17 pairs (17.65%) was this

interaction pattern identified as prevailing. The interaction pattern observed with the

highest number of ACMC dyads was high equality and low mutuality which led to

Dominant/Dominant discussion – for eight dyads out of 17 (47.06%) this pattern of

interaction was recognized as the prevailing one. Table 4.2 presents the patterns of

interaction used in each CMC environment and the number of dyads for whom a specific

pattern of interaction was prevailing.

Table 4.2

Dyadic Patterns of Interaction by CMC Group

Identified in	Dyadic Pattern	ACMC Dyads	SCMC Dyads
FTF (Storch, 2002) and CMC interactions	Collaborative/Collaborative	3	9
	Dominant/Dominant	8	0
	Dominant/Passive	1	1
	Expert/Novice	0	1
CMC interactions only	Expert/Dominant	0	1
	Collaborative/Dominant	5	1

Based on the figures presented in Table 4.2, it could be concluded that the

distribution of dyadic patterns across the two environments was different. Low mutuality

seems to be more prevalent in an ACMC environment – nine dyads demonstrated a type

of interaction that had low mutuality. However, the majority of these dyads were highly

equal in their discussion, thus demonstrating a pattern of interaction in which both participants dominated the discussion. Further in this section, the observed patterns of interaction are illustrated with CMC logs from the treatment CMC transcripts.

The collaborative dyads. Log 4.1 presents an example of a collaborative interaction pattern in an ACMC environment. This CMC log is a part of the treatment CMC interaction between Anna, a female student from Russia, and Rashid, a male student from Saudi Arabia. Several trends of collaborative pattern of interaction were identified in the interaction of this dyad that are representative for the ACMC collaborative dyads.

These two students were able to create a common discussion space. Examples that illustrate the common discussion space of the dyad are evident in lines 2-11: Anna stated her view about the pictures (lines 2-7), then Rashid built on Anna's posting, rephrasing and adding detail (lines 9-12). He took the next step and directed their discussion further by asking Anna to elaborate on her previous posting (lines 15-16). In two minutes he reposted his request (lines 18-20) adding the name of his partner to the greeting line (line 18). This could be interpreted as taking time to read his posting and to edit it in order to show partner consideration. Next, Anna posted a rather lengthy string of sentences (lines 22-34).

Storch (2002) indicates lengthy contribution to discussions as an indicator of dominance; however, this posting contained several signs consideration of partner's opinion: (1) she started it with addressing her partner (line 22), (2) she directly went into providing the information requested by the partner (lines 23-25), (3) she was constructive in terms of progressing through the task and suggested a focus topic (line

28), (4) she asked Rashid to provide his opinion about a specific topic for the paragraph and stated her suggestion (lines 26-34). In this last posting, she addressed multiple aspects of the task: requested partner's opinion about content and shared her ideas about paragraph organization, including a topic sentence and supporting ideas. Line 26 contains explicit request for opinion; further, in line 28, the phrase "I think" indicates that she was sharing her opinion, implicitly suggesting that her partner's opinion was expected. In line 33, she suggested a topic sentence using "may be," again implicitly showing that she was expecting her partner to contribute to her paragraph construction ideas. Finally, she ended her posting with a question to her partner (line 34). Thus, the interaction of this dyad shows a joined problem solving space within which the dyad members attempt the task completion.

CMC Log 4.1

ACMC Collaborative Discussion

1   **FROM:** Anna   (02/19/06 11:47 AM GMT -06:00)

2   I think two pictures on the bottom shows a lot of people live in THe USA.But it too

3   simple I mean they are big differense betven Alaska and NY area but it not for

4   paragraph

5   The sekond two pictures about people in America have different home, different

6   neiborhood becouse they came from different country-seesecond picture.

7   The last two pictures explane this county has big city on bouth costs.

8   **FROM:** Rashid   (02/19/06 3:03 PM GMT -06:00)

9   The picture describe that the U.S is very big including alascka and hawaii and very

10   populated .People live in big cities as well as townhomes or small villages. It also

11   describes that it has a variety of mixed people from different countries, that most

12   people live in big cities such as NY , Los angeloes and Chicago.

13   **FROM:** Rashid   (02/19/06 3:08 PM GMT -06:00)

14   HI MY FRIEND ....

15   I HAVE TO ASK YOU ABOUT WHAT YOU MEAN BY THE DIFFERENTS

16   BETWEEN ALASKA AND N.Y ? IS IT THE AREA OR THE CULTURE ?

17   **FROM:** Rashid   (02/19/06 3:10 PM GMT -06:00)

18   HI MY FRIEND ANNA.........

19   I HAVE TO ASK YOU ABOUT WHAT YOU MEAN BY THE DIFFERENTS

20   BETWEEN ALASKA AND N.Y ? IS IT THE AREA OR THE CULTURE ?

21   **FROM:** Anna   (02/19/06 5:32 PM GMT -06:00)

22   hai,my frend!

23   I think alaska and Havai have so different clumat and besouce of that it people have

24   realy different life and climate have changed peple.

25   But I think we have to consentrate more people came from different country.

26   Rashid, what do you think about pictures, and we have (2)-main and supporing

27   ideas.

28   I think topic-people in the USA.

29   Main-melting pot.

30   1.The basis culture and language from England.

31   2.People came from different country also most not from England.

32   3.They live, work togever and also they are merrid.

33   Mayby topic can be- America has own culture.

34   What about people?

    Log 4.2 illustrates a collaborative interaction pattern in an SCMC environment.

Mina, a female student from Colombia, age 28, and Dimo, a male student from Saudi

Arabia, age 28, were the participants in this exchange. As compared to the ACMC

sample, the interaction was more dynamic, the postings were higher in number and

shorter in length. Lines 1-11 present their exchange of ideas about the pictures; Mina

described one picture and her partner took over and provided the description of the next.

They demonstrated their consideration of each other in several different ways: Dimo

started his sentence with "and" (line 3) as a continuation of Mina's posting; further, with

the phrase "I think" in line 5 he suggested that he was sharing his opinion, implying that

his partner's opinion was expected as well. In line 7 Mina refined Dimo's ideas about the

fourth picture (he shared it in lines 3 and 4). When discussing the fifth picture (lines 9

and 10), she addressed Dimo with "you see!" inviting him to look for the image on which

she based her conclusions. Further (lines 12-23) they bounced ideas back and forth about

immigration answering each other's questions. The equality of this dyad was relatively

high and the participants demonstrated high consideration of each other.

CMC Log 4.2

 SCMC Collaborative Discussion

1   Mina: The third one, represent the towns, how the cities are organized,

2   the houses ... but in small cities...

3   Dimo: and in the other pictures i see people from diffrent country(the

4   have diffrent flags) they came to the U.S.

5   Dimo: the third one i think is the origine country of the immigrants

6   Dimo: small country and village

7   Mina: The fourth one represent all the imigrant people who live in USA,

8   this people are from all the world

9   Mina: Te fifht one is like the big cities ... you see! there are a lot of big

10   buildings and a big bridge

11   Dimo: yes you right

12   Mina: And the last one is about the geography .... what do you think about the

13   last one?

14   Dimo: what about the last one what you think?

15   Dimo: maybe , it show the big stat or citys where the most immigrants

16   lives

17   Mina: yeah, it maybe is the important cities for USA ..

18   Mina: and what do you think about the People of USA?

19   Dimo: i think that the pople in U.S. is a mix of many diffrent origine

20   Mina : I think people in USA are from all over the world...the people

21   came to USA looking for a better life and opportunities that maybe in they own

22   country they couldn't find.

23   Dimo: that's true

In both ACMC and SCMC interactions examined in the study, the collaborative pattern demonstrated communication during which learners were engaging in the task completion process by developing each other's ideas. The flow of this progress seemed to be acceptable for both members of the collaborative dyads. The participants were creating and working within a "joined problem space" (Teasley & Roschelle, 1993) by approaching together each part of the task and engaging with each other's ideas. Their interactions were cohesive and flowed logically. Although in the ACMC discussions, the postings were longer as compared to the SCMC and sometimes one posting would address several aspects of the task, the participants clearly indicated consideration of their partner's contribution. Further, they progressed through the task developing each other's postings. Thus, when positioning these interactions within the quadrants defined by the two continuums of the dyadic interaction model, mutuality and equality (Storch, 2002), the collaborative dyads demonstrated high mutuality and high equality.

The dominant/dominant dyads. There were eight dyads that demonstrated low mutuality and high equality patterns in their interactions. Following Storch's (2002) model, both of the participants in these dyads were identified as dominant. The high equality/low mutuality pattern was the predominant pattern in the ACMC interaction – eight out of 17 dyads performed the pre-writing task demonstrating a Dominant/Dominant pattern. Thus, 47% of the dyads who communicated via ACMC demonstrated this type of interaction pattern. Log 4.3 presents an example of Dominant/Dominant interaction in an ACMC environment.

CMC Log 4.3

ACMC Dominant/Dominant Interaction

1   **FROM:** Shin   (10/14/05 9:24 AM GMT -06:00

2   Yes, I'M too.

3   **FROM:** Shin   (10/16/05 4:14 PM GMT -06:00)

4   I think that this is a my topic sentence;In the U.S, most people are living in the city

5   and people came from different countries and have different appearance.

6   Supporting ideas; 1.Most people live in city because they can get a lot of

7   advantage.

8   2.people have different appearance-European, Asian,Africian.

9   3.people experience many kinds of culture.

10   **FROM:** Sebastiano (10/16/05 4:56 PM GMT -06:00)

11   ok, here is what i think.

12   for the topic sentence i think is better this:

13   topic: now the people in the united states live as a friendly and united country with

14   all the ethnic groups without segregation.

15   for main idea: we should talk about the way of life of us people.

16   and supporting ideas: we can talk about all the cultures in US and the most

17   important cities, and also we can talk about the life in the suburbs and farms

18   **FROM:** Sebastiano (10/16/05 7:22 PM GMT -06:00)

19   according to the images we can talk about all the people in the whole country, we

20   cant talk about too about the lifestyle in suburbs and farms and also in big cities,

21   and also teh msot important caracteristics of this big cities, we cant talk about the

22   "melting pot" the compilation of all the cultures

23   **FROM:** Shin   (10/17/05 10:02 AM GMT -06:00)

24   Hi!

25   Could you tell me more about "melting pot"?

26   **FROM:** Shin   (10/19/05 8:12 PM GMT -06:00)

27   You have a lot of idea. Thank you for your suggestion. Iwill write in my paragraph

28   such as population in theU.S,immigration,multiculture,urbanis

The participants in this interaction were Sebastiano, an 18-year-old male student from Colombia and Shin, a female student from Korea, 38 years of age. Both, Sebastiano and Shin contributed their ideas but did not show any signs of being engaged with each other's ideas. There was only one request from Shin for clarification (line24) which was ignored by Sebastiano. They approached the pre-writing task completion separately. There was no evidence of attempt for creating a joined problem space: both of them stated explicitly that they post their own ideas (lines 4, 10, 11, 26-27). In her last posting, Shin recognized Sebastiano's contribution (line 26); however, she stated that she would write her paragraph using her ideas and rephrased the ideas she posted earlier. However, she stated in her interview that she included her partner's ideas, whereas Sebastiano said that he used only his own ideas. There was one hint of disagreement during the online discussion expressed by Sebastiano (line 11) which was ignored by Shin, and it did not trigger a discussion.

The expert-novice dyad. During the treatment, only one dyad demonstrated a communication pattern of a high mutuality but low equality. The members of this dyad were Temi, an 18-year-old female student from Japan, and Tiana, a 25-year-old female student from Colombia. The students preformed their pre-writing discussion in an SCMC environment. While in their discussion there were several collaborative exchanges, the main trend was for Tiana to lead the discussion and guide her partner through the task completion. This guidance was readily accepted and actually requested by Temi during the discussion. Following is the CMC log of the pre-writing discussion of these two participants.

CMC Log 4.4

SCMC Expert-Novice Discussion

1   Tiana: LETS START

2   Temi: ok.what do you think about 1)??

3   Tiana: I think that US is a big country that has many people of different

4   nationalities

5   Temi: i think that where people should live.

6   Temi: what ideas we should include?

7   i don't know we have to think about paragraph include topic sentence?

8   Tiana: what do you mean?

9   Tiana: NOW

10   Temi: what should we discuss?

11   Tiana: OK, The topic is the people of the US, so we have pictures that represent

12   that idea

13   Tiana: so, i think that we can talk a little bit

14   Temi: ok a little bit?! cool!!!

15   Tiana: of what do you think about pictures, what they represent,

16   Tiana: jajja

17   Temi: so, i think that these pictures meanning is about immigration. i mean many

18   people immigrated here and people do somethings.

19   Tiana: ok, im agree. I think that the pictures show that the two more important

20   cities for inmigrants are NY and L.A

21   Tiana: What about the houses?

22   Tiana: like some live in houses and another in buildings jajajja?

23   Temi: i wanna ignore about houses because i don't know!!! ha ha ha no, just

24   kidding. OK let me think please wait a few minute. you can sleep

25   Temi: maybe this picture meaning is before and after... that's all. what do you

26   think?

27   Temi: top of the left's picture is immigration, and middle of the right's picture is

28   immigration too. and two more pictures is NY and LA right?

29   Tiana: maybe is like some people in US live in big cities and another in small cities

30   Temi: ok i agree. so. we should include immigration important cities, big cities and

31   another small cities.

32   Tiana: NO, I THINK that the right picture in the second line represent the people

33   where many american came from

34   Tiana: the three represent, the cities where inmigrants entered to US: L.A, NY,

35   GULF OF MEXICO

36   Temi: okOKokOK!!! your opinion is better. i agree!!!

37   Tiana: THE houses I THINK LIKE, DIFERENT KIND OF CITIES WHERE THE

38   PEOPLE LIVE

39   Tiana: BUIDINGS OR HOUSES

40   Temi: buiding of houses is what?

41   Tiana: LIKE SOME AMERICAN PEOPLE LIFE IN BIG CITIES IN LARGE

42   BUILDING

43   Tiana: AND ANOTHERS LIVE IN SMALL CITIES, IN BIG HOUSES, AND

44   QUIET PLACES

45   Tiana: (do you understand what i mean?)

46   Tiana: NOW WE CAN START THE BRAINSTORM ABOUT PEOPLE IN US

47   Temi: i got it!

48   Tiana: HOW THEY ARE, WHERE THEY LIVE, HOW THEY ARE

49   Temi: i think that they have a dream.

50   they wanna come here. they get visa and they can live here..

Tiana, who took the expert role, was very active throughout the whole discussion and, in certain moments, she even dominated the discussion (lines 32-44). However, her consideration of the partner was evident; thus, her interaction was high in terms of mutuality. She initiated the discussion (line 1), encouraged her partner to post and provided her opinion (lines 8, 14, 20-21), offered guidance for task completion (lines 14, 44), and made sure that the ideas she shared were clear to her partner (line 43).

On the other hand, Temi assumed a different role in the discussion. Although she was not passive in the process of task completion, her contribution was rather limited. She quickly abandoned her ideas and agreed with her partner rather than expanding and building on her partner's opinion, as the collaborative dyads did (lines 34, 45). However, Temi frequently requested her partner's opinion (lines 2, 5-6, 9, 24, 26). Further, in the interview, Temi indicated that she relied on her partner to evaluate her ideas and she based her decision about including her ideas from the discussion based on her partner's opinion: *"Sometimes include but when I think my information is incorrect, I didn't include my ideas. If my partner agrees with me, I can include my ideas or opinion."* Thus, although the mutuality in this pair work was clearly visible, the equality was low, with one of the

participants (Tiana) taking the role of the expert and the other (Temi) the role of the novice.

The dominant/passive dyads. During the pre-writing discussion, two dyads demonstrated low mutuality and low equality patterns. One of these two dyads completed the pre-writing task in an asynchronous and the other in a synchronous CMC environment. Thus, this pattern of interaction comprised 5.88% of the ACMC discussions and 7.69% of the SCMC. While these dyads were situated within the same level of mutuality and equality, their specific interaction patterns were somehow different. In the ACMC dyad, only one of the members participated in the task by posting his opinion, whereas both of the SCMC dyad members posted on the chat forum during the pre-writing session.

The participants in the ACMC Dominant/Passive dyad were two male students from Korea, age 21 and 25. One of them (Kyou, 25) posted a lengthy description of the pictures assigned for pre-writing discussion.

The tone of Kyou's posting indicated that he was not highly interested in his partner's contribution. His posting was one long monologue in which he addressed his partner once using the obligation modal "have to" (line 9). He included two questions in his posting and immediately provided answers to them (lines 4-7, 9-11). The frequent use of singular and plural first person pronouns (lines 2, 4, 5, 9, 13, 23, 24, 33) along with the phrases "you have to know" (lines 9-10) and "that's not important" (14-15), suggested a rather authoritarian tone. The other participant did not post any discussions. During the post-treatment writing session, the researcher noted that he opened the ICA2 section of his dyad and read the discussion before he started writing. In the CMC interview, he remained

passive as well and did not answer the questions related to the CMC pre-writing interaction and did not explain the reason for not completing the pre-writing task. Log 4.5 presents this ACMC Dominant/Passive discussion.

CMC Log 4.5

ACMC Dominant/Passive Interaction

1   **FROM:** Kyou (02/19/06 11:07 PM GMT -06:00)

2   In these 6 pictures, I will say:

3   First of the pictures

4   We can see what America really is. Everybody talks about what American is, but

5   do we really know the America? This picture shows us the answer. This small map

6   also tells us the Americans live throughout United State, although it's cold like

7   Alaska, or small like Hawaiian Islands.

8   Second of the pictures

9   We looked at two different styles' houses. Why are the houses different? You have

10 to know the America is a big country including many races or cultures, so you can

11 see a lot of different styles in America. Of course this isn't just two types.

12 Third of the pictures

13 I see the big city beside the sea, but I am not sure what the city is. I have been in

14 San Francisco and this city is like it, but some people said that is New York. But

15 that's not important, this picture just shows us a history. Everybody knows

16 America was colonized before, so the first areas colonized was coasts. And this

17 picture tells us these areas have been these big cities.

18 Fourth of the pictures

19   This is also a big city like third picture, but the different is what we don't see the

20   sea. The meaning is the inland areas grew to big cities after the coasts, like

21   Chicago, or Denver.

22   Fifth of the pictures

23   If you just see this picture, I guess you will say this means American from a lot of

24   countries. But I saw one of them is Canada, so I think there is the different

25   meaning. I think it wants to tell us America welcomes any country to come here,

26   and people like to come to America, too. So it became to present.

27   Sixth of the pictures

28   New York, Los Angeles, Chicago, Houston, they are the biggest cities in America,

29   but they are throughout America. Form east to west, north to south, they are in

30   different places. The mean Americans are around the United State, so it's an

31   adaptable country for people.

32   Topic sentence:

33   I will tell you what Americans are from my point.

The participants of the SCMC pair with Dominant/Passive pattern of interaction

were Faraz, a 19 years old student from Saudi Arabia, and Kamil, a 24 years old student

from Kuwait. As it is evident in the SCMC interaction log (CMC Log 4.6), Faraz

progressed through the task without asking or offering any assistance to Kamil. His

postings followed one after another (lines 5, 7-11) without any indication that he

expected his partner's contribution and without responding in any way to Kamil's

distracting remarks (lines 6, 13). The interaction pattern demonstrated by Faraz, based on

the Storch's model, could be classified as dominant. On the other hand, Kamil was

passive. He contributed very little to the discussion; four out of his five postings actually

were either distracting and not related to the task (lines 6 and 13) or presented a general

question (lines 2 and 12). Only one posting (lines 3-4) contained text that was remotely

related to the assigned task. He stated that he did not agree with anything Faraz posted

(line 13) but did not clarify his opinion and did not seek assistance from his partner. Log

6 presents their interaction.

CMC Log 4.6

SCMC Dominant/Passive Interaction

1   Faraz: hi

2   Kamil: y whats up

3   Kamil: well. i think the first picuter tell us there are many people wanna moved

4   from them countrey or travel to somewhere

5   Faraz: in the firs picture it's seem that the populatin of usa incease

6   Kamil: yeah maybe who`s know :)

7   Faraz: the secound picture it's show the amazing desing for the buldings and how

8   it's organize

9   Faraz: the 4th picture it shows that in USA there are diffirent nationalities which

10   cause diffirents culture.

11   Faraz: the final picture shows the map of USA and the impotant city there.

12   Kamil: hey whats up

13   Kamil: first of all i`m disagree :P foe every think.

Emerging Patterns

When analyzing the CMC interactions for the current study in the context of Storch's model, the researcher expected to encounter emergent types of interaction patterns. These expectations were based on the fact that the model was created with a consideration of face-to-face interactions, whereas the interactions analyzed in the current study were preformed in a CMC environment. While most of the dyadic interaction patterns analyzed in this study would fall within the model's Equality/Mutuality continuum quadrants, two interaction trends which would not fit the model emerged from the data.

The disengagement pattern. The researcher labeled the first pattern as disengagement. This pattern was evident in cases when one of the participants, after contributing to the discussion demonstrating the patterns specified by Storch (2002), abandoned it either temporary or permanently before it was completed. Thus, this pattern was identified as secondary to the main dyadic patterns indicated by Stroch (2002).

The researcher differentiated this pattern from the passive or the novice ones because it was observed with participants who contributed substantially to the discussion and at the same time the disengagement strongly influenced discussion dynamic. Examples of disengagement could be found in Anna's and Rashid's interaction (Log 4.1). In line 34 Anna posted a question to her partner, but he never answered it – abandoning the interaction rather early. Similar was the situation with Sam's and Isabella's ACMC interaction (CMC Log 4.7). Interestingly, this pattern was observed in 12 (71%) of the ACMC dyads, whereas only one dyad (7.7%) of the SCMC group demonstrated it (CMC Log 4.6). However, it should be noted that L.E.C.S. does not provide time tags to the chat postings; thus, the researcher assumes that there is a possibility that during the SCMC

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interaction, there were some undetected instances of temporary disengagement from the task.

Dyads with mutuality and equality mismatches. In Storch's model (Storch, 2002), both members of the dyads were assumed to occupy the same quadrant of the Mutuality/Equality continuum; this assumption was further confirmed by the dyadic face-to-face interaction data analysis performed by Storch in the model construction. When applying the model to CMC interaction data, the researcher noted that in some of the cases, the two members did not occupy the same quadrant of the Mutuality/Equality continuum. In other words, they demonstrated patterns of interaction that did not match each other on the level of Mutuality.

A total of seven dyads demonstrated a mutuality mismatch. Six dyads comprised a collaborative (high mutuality) partner with a dominant (low mutuality) partner. In one dyad, a participant who demonstrated an expert (high mutuality) pattern of interaction worked with a partner who utilized a dominant (low mutuality) pattern. The ACMC group had the highest number of mutuality mismatch dyads – five (29.4%), whereas only two SCMC dyads (15.4%) demonstrated such mismatch.

Collaborative/dominant dyads. With the ACMC pairs the trend was that one of the participants was approaching the task collaboratively, whereas the other assumed a dominant role entirely or almost entirely ignoring the partner. Log 4.7 illustrates such an interaction. The two students participating in the exchange were Isabella, a 28-years-old female student from Italy, and Sam, a 46-year-old student from Haiti. In this interaction, Isabella posted one long message which mainly stated her opinion about the topic. There were two attempts on her side to set a collaborative discussion. In line 26 she addressed the

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partner with a question about his opinion and in line 27 she used the modal verb "could" implying that her partner could provide his opinion. However, the overall tone of her posting was dominant: except for the above mentioned instances, there were no other requests addressed to the partner or any other signs of expectations and recognition related to partner's contribution. On the other hand, Sam made several collaboration moves: he recognized Isabella's contribution (line 31), indicated that he would build his posting around her ideas proposing a different suggestion for paragraph organization (lines 32-46). Once he started developing his ideas, he used the modal "would" twice (lines 33-34) implicitly suggesting that the inclusion of the idea was hypothetical and the partner's suggestions were expected. Finally, he explicitly invited Isabella to make her further contribution to the task discussion (line 47). However, Isabella never revisited the discussion (evidence of disengagement). In all five of the ACMC dyads with a mutuality mismatch, the secondary interaction pattern of disengagement was observed with one of the partners. In four out of the five ACMC dyads, the participant who abandoned the discussion was the one who demonstrated a dominant pattern of interaction.

CMC Log 4.7

ACMC Collaborative/Dominant Interaction

1   **FROM:** Isabella   (10/17/05 9:36 AM GMT -06:00)

2   Hello Sam sorry for my delay.

3   These are my ideas:

4   1 picture: describe the density in the 50th states if America: people in the state of

5   America are uniform distribuited and so in Haway island. In Alaska the majority

6   density of the people is in the south part of island that is the farest from Pole.

7   2 picture: a lot of the people live in the big cities, in high and essential skyscrapers

8   with a lot of levels.

9   3 picture: other people lives in comfortable and with few levels houses in the

10 suburbs far from the frenzied live of the big cities.

11 4 picture: in the US the people have a lot of origins. They came from England,

12 Ireland, Scotland, Germany, Spain, Mexico, Ireland, France, China, Sweden,

13 Vietnam, Canada and Korea.

14 5 picture: a lot of cities are built near the sea and often long bridges link 2 different

15 part of these cities.

16 6 picture: the most densely populated cities are New York on the Atlantic sea and

17 Los Angeles and San Diego on the Pacific coast.

18 ORGANIZATION:

19 These 6th photo can be correlated so:

20 First of all I would put the idea of the first picture: people in the state of.....

21 second I would put the idea inthe 6th picture: the most densely....

22 third I'd put the idea of 4th picture: in the US the people....

23 fourth I'd put the idea of 2nd picture: a lot of people live....

24 fifth I'd put the idea of 3th picture: other people live in comfortable...

25 sixth I'd put the idea of 5th picture: a lot of cities are built....

26 What do you think????

27 The topic sentence could be: The people of the us can be described by the

28 geographical distribution and origins.

29 Concluding idea: Mixture of race in spread territory (in order to enlarge!!!!).

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30   **FROM:** Sam   (10/19/05 11:07 AM GMT -06:00)

31   Hi, Isabella. You have done a tremendous work. However, your picture's ideas are

32   almost the same except some little change. so I don't need to rewrite them again.

33   the only difference is the organization of the ideas. Here how I would organize

34   them :

35   1. I would put the idea of the 4th picture telling about the race and origin of U.S

36   2. I will put the idea of the 1st picture : about density and geographical distribution.

37   3. """""' ' ' ' ' """"""""""""""""6th picture : the most populous cities

38   4. " " " " " " " " 5th picture : telling about the situation of the construction and so

39   on.

40   5. " " " : " " " " " " " " " " "2th picture telling about High level people.

41   6. " " " " " " " " ?": " " " ""3th picture, telling about the people living in the surburb

42   According to me ,the topic sentence should be ""The people of U.S. con be

43   distributed by diferrent ways.

44   topic sentence wiil be : people in U.S.

45   controlling ideas : different was to describe it.

46   Then we will have : ST1 '1st way is by race and Origin

47   ST2: description by density and geographical distribution

48   ST3: Living situation of the people.

49   so you tell me about what do you think.

In the synchronous discussion, only two dyads demonstrated a mutuality mismatch. In one of the dyads, the participants demonstrated a dominant and an expert patterns and in the other – a collaborative and a dominant patterns. These discussions are presented in CMC logs 4.8 and 4.9.

The interaction of the SCMC dyad that demonstrated collaborative/dominant mutuality mismatch was different from the ACMC ones. While for each of the ACMC dyads with a mutuality mismatch, the dominant participants simply ignored their partners disengaging from the task as soon as they perceived their contribution to the task to be completed, the dominant behavior of the SCMC participant was different.

Isa, a 22-year-old male student from Morocco, was the SCMC dyad member who demonstrated a dominant behavior while working on the treatment task with his partner, Mia, a 40-year-old female student from Colombia. Mia was willing to work together with Isa, providing her views on the task (for example lines 11, 16, 26-27, 31), striving to keep the interaction orderly and cohesive (lines 28, 40-41, 57-58), and expressing interest in her partner's opinion (lines 44, 48). Isa, however, seemed to have an authoritative demeanor from the beginning of the discussion. He chose the pseudonym Isa rather than his real name and refused to introduce himself in the beginning of the discussion (line 4); further, he typed using all capital letters which, according to the rules of various chat communities is a sign of dissatisfaction, anger or pointing out that the information must be noticed by the audience (Abras, 2002). Based on Isa's interview responses, he used chat frequently to communicate with family and friends, thus it could be assumed that he would be informed about the basics of chat etiquette. However, even if it is assumed that he was not familiar with this particular detail, the tone of many of his postings tended to be authoritarian (for

example line 4, 5, 37). He attempted to command his partner rather than to constructively contribute to the task completion frequently giving directions (lines 7, 9, 12, 14, 37). Mia sensed this and at some point she stated that Isa was rude (line 33). However, he ignored this remark. In her interview, Mia shared that she was highly dissatisfied by the way the online discussion progressed: *"I dind't feel comfortable because my partner thought I didn't understand anything."*

CMC Log 4.8

SCMC Collaborative/Dominant Interaction

1	Mia: Hi everybody
2	ISA: HI MIA
3	Mia: Who is Isa, I want to know
4	ISA: U DON T NEED
5	ISA: LET START WORKING MIA
6	Mia: Ok. U.S. has lots of people who live in big cities
7	ISA: WE HAVE TO TALK ABOUT THE PEOPLE IN US
8	Mia: C'mon
9	ISA: HAVE U READ THE PROMPT ON THE YELLOW SHEET?
10	Mia: yes
11	Mia: Some of them live in cities and some of them in country
12	ISA: OK LET'S GO
13	Mia: zzzz
14	ISA: FIRST OF ALL WE HAVE TO TALK ABOUT THE DIFFERENT
15	STATES IN US

16   Mia: many people are from other countries

17   ISA: THERE ARE 51 STATES IN USA

18   Mia: 50

19   ISA: OK

20   ISA: AND PEOPLE IN US ARE DIVIDED BETWEEN THESE 50 STATES

21   Mia: what else? US has big cities like NY, Chicago, Los Angeles, San Diego

22   ISA: THEN WE WILL TALK ABOUT THE BUSINESS BUILDINGS AND THE

23   SKYSCRAPERS IN US BECAUSE MOST OF PEOPLE WORK THERE

24   ISA: YES WE CAN ALSO TALK ABOUT THE BIG CITIES IN US SUCH AS

25   NYC LOS ANGELES

26   Mia: People in the US are very polite, like to make much money and to spend too

27   mucha

28   Mia: Yes, I wrote about that at the beggining

29   ISA: OK

30   ISA: DO U UNDERSTAND THE THIRD PICTURE?

31   Mia: Now, they make big engineering buding like bridges

32   ISA: I THINK IT SHOWS THE AMERICAN'S HOUSE

33   Mia: Please, don't try to say I'm not intelligent. You're rude.

34   ISA: YES I AGREE

35   ISA: WE CAN SAY THAT

36   ISA: GOOD JOB MIA

37   ISA: CONTINUE...

38   ISA: WHAT ABOUT THE FOURTH PICTURE?

39   ISA: HELLO...???

40   Mia: Ok. we can begin with organize the paragraph. Yes. Here live people from

41   around the world

42   ISA: I THINK THAT IN THE FOURTH PICTURE SHOWS THAT THERE ARE

43   ETHNIC DIVERSITY IN USA

44   Mia: Are ypu agree? Do you want to add something else?

45   ISA: OK LET'S ORGANIZE OUR PARAGRAPH

46   ISA: WE START WITH THE MAIN IDEA OK?

47   Mia: The topic sentence could be: The ethnic diversty of people of the United

48   States . What do you think?

49   ISA: YES I AM OK BUT WE HAVE TO WRITE A SENTENCE

50   ISA: IT COULD BE : THE PEOPLE OF THE USA FORM AN ETHNIC

51   DIVERSITY FOR SEVERAL REASONS

52   ISA: REPRESENT INSTEAD FORM

53   Mia: ok

54   ISA: WHAT DO U THINK?

55   Mia: the supproting ideas we can describe eah picture

56   ISA: I THINK WE WILL USE THE PICTURES FOR DETAILS OR EXAMPLES

57   Mia: Yes. I said that. If you're talking about controlling idea "several reasons"

58   could be.

59   ISA: THE SUPPORTING IDEA COULD BE: USA IS THE FIRST POWER IN

60   THE WORLD THANKS TO THE PEOPLE WHO LIVES THERE

61   ISA: THEN WE CAN TALK ABOUT THE PICTURES

62   Mia: I think we can write about how are Americans and their values

63   ISA: ENGINEERING BUILDING SKYSCRAPERS ...

64   Mia: Not only write about fisical sources, but also write about thougth, believes,

65   ISA: YES WE CAN THESE KIND OF EXAMPLES

66   ISA: DO U THINK WE ARE READY TO START WRITING OUR

67   PARAGRAPH

68   Mia: yes.

69   ISA: SO WE CAN PRINT

70   Mia: Isa, but we have to organize the entire paragraph. What about the concluding

71   sentence?

72   ISA: IT COULD BE : FINALLY THE USA IS STILL THE FIRST POWER IN

73   THE WORLD

The dominant/expert dyad

The participants in the dyad that demonstrated dominant/expert patterns were

John, a 26-year-old student from Korea, and Mariana, a 34-year-old student from

Colombia. In their interaction, John was the more active participant. He had a total of 14

postings, and, in most of these postings, there was a clear evidence of task consideration.

His interaction had several of the indicators of the expert pattern: he initiated the task

completion (line 2), contributed his views about the pictures he had to discuss (lines 9-

14, 20-23, 28-31), encouraged Mariana to stick to the task (lines 6, 7, 8, 38, 40), and

directed her to the handout presenting the images related to the task (lines 18, 19). He

did not ignore Mariana's postings and provided his opinion about the topics addressed

by her (lines 25-26, 34), although they were only marginally related to the task; however, after that he immediately returned back to the task topic.

Mariana, on the other hand, used the discussion space one-sidedly – as a forum to share her own personal experience (lines 4-5, 15-17) or general ideas about the topic without specifically referring to the images that were part of the task (lines 24, 27, 32-33, 35, 39, 41) or to the ideas shared by her partner. She ignored her partner's attempts to guide her through the task and to show her the information sources she needed to use for task completion. It seemed that she was unable to engage with her partner's contribution; her focus was on her own ideas and experiences which prevented her from engaging with her partner's ideas. At times, it seemed that she did not read her partner's responses. For example, her post about polite and rude behavior of Americans (lines 4-5) was not directly related to the task; therefore, her partner first asked for clarification of her information sources (line 6), but this request was ignored. Further, John encouraged her to post more (lines 7, 8); he continued with his postings related to the task (lines 9-14). In line 15, Mariana posted again, and again she ignored her partner's contribution; her posting directly continued her thought from lines 4-5. Therefore, the little attention Mariana paid to her partner's contribution and her unwillingness or inability to relate to this contribution, suggested a dominant pattern of interaction; whereas John demonstrated mainly signs of an expert pattern. Thus, Mariana's interaction could be situated in the low end of the mutuality continuum, whereas John's interaction patterns correspond with the high end of the mutuality continuum.

CMC Log 4.9

1   JOHN: sorry i'm late

2   JOHN: let's start

3   Mariana: JOHN > sure

4   Mariana: I have heard that the people in the U.S are very polite but some people are

5   rude.

6   JOHN: where R U?

7   JOHN: hey

8   JOHN: hi -

9   JOHN: i think that we must include "melting pot"

10   JOHN: a lot of people come to USA

11   JOHN: america is surrounded ocean

12   JOHN: that mean that other country people enter america more easy....

13   JOHN: easier than other country...

14   JOHN: so usa is open place...so we must include open things of american...

15   Mariana: yes,because I work in a restaurant as a hostes and some people ask me if

16   they can have the witress they like and, I tell them I can not because it is in turns.

17   then they get very apset.some of them are not patience.

18   JOHN: look at the picture....

19   JOHN: yellow paper

20   JOHN: usa houses have no fence

21   JOHN: 3rd picture

22 JOHN: also there are many high building

23 JOHN: here what are we finding this picture

24 Mariana: I don't think the same because, the american embassy is very strict with us.

25 JOHN: but other embasys also closing to us

26 JOHN: because we must protect their enemy....

27 Mariana: people can come easy to usa but, by occean.

28 JOHN: big building...we can use this by idea...

29 JOHN: they like to show something ...like confidence

30 JOHN: to other country...

31 JOHN: so they built big building....

32 Mariana: I think people come to the usa is because they have the oportunity to

33 come here.

34 JOHN: right...i agree that

35 Mariana: people from usa like to be on time to appointments.

36 JOHN: o.k

37 JOHN: any opinion?

38 JOHN: that isn't involved six picture...

39 Mariana: they like to respect the lines in the ban and others places.

40 JOHN: we have to discuss involved six picture

41 Mariana: they are very organize.

Class Dynamics and Patterns of Interaction

As it was stated in the *Class Dynamics* section of this chapter, two of the Level III

Writing class sections participating in the study during the fall semester of 2005 had very

different dynamics in their face-to-face classes and these dynamics were evident during the computer laboratory sessions as well. The researcher compared the patterns of interaction of these dyads. A total of seven dyads was examined: four dyads were composed of participants from the section that demonstrated closer relationship and willingness to collaborate with each other, and three dyads from the section that had a more alienated relationship.

The comparison of dyadic patterns of interaction of the two fall 2005 writing class sections revealed different distribution of the patterns. Three of the dyads from the more collaborative section of the writing class demonstrated patterns of high mutuality: two dyads also had high equality interaction with both members being collaborative and one dyad had low equality with one member being an expert and the other novice. One dyad had a mutuality level mismatch with one member being dominant and the other – collaborative. None of the three dyads composed of students from the more alienated section of the writing class demonstrated a high mutuality pattern: two of the dyads had a mutuality level mismatch with one member being dominant and the other – collaborative and the other dyad demonstrated a low mutuality level with both participants being dominant. Although it is difficult to attribute the difference between the patterns of the two sections solely to their class dynamics because all of the "alienated section" dyads who had full data set were ACMC group dyads, while two of the dyads from the "collaborative" section participated in the SCMC pre-writing discussion, it could be suggested that there is a possibility that the class dynamics had some influence on the dyadic pattern of CMC interaction.

Computer Mediated Interview Outcomes

The researcher conducted interviews with all students from Level III Writing class in Fall 2005 and 2006. Only the interviews of the students who had a complete treatment data set (pre-treatment and post-treatment writing samples and CMC pre-writing treatment) were considered for analysis. Five of the participants who completed all three assignments related to the treatment were reluctant to answer the interview questions despite multiple reminders. Thus, 55 interviews were analyzed.

The structured interviews were conducted asynchronously using ICA2 as a medium. During the first semester, the questions were posted on an ICA2 space dedicated for each participant; in the second semester collection, due to the high number of participants, the researcher posted the question in the ICA2 space dedicated for each Level III Writing section and received the answers via the *send a personal message* function of ICA2. The follow up questions and requests for clarifications were sent as personal messages. Because of the asynchronous nature of the interview medium, the participants had the liberty to avoid answering some of the questions; thus, 21 out of the 55 interviews were partially incomplete with one or more questions left unanswered. However, the researcher took these interviews into account because they provided valuable information about participants' background, opinions, and experiences related to the study. In order to provide more comprehensible presentation of the theme frequencies, the number of students/answers for each theme are reported along with what percentage of total answers this number presents.

The interview outcomes revealed several important trends related to the factors that influence the CMC pre-writing interaction process. These trends concerned previous

computer related experience, attitudes towards writing, computer mediated

communication, and task perception. The interview questions are presented in table 4.3.

Table 4.3

Interview Questions Outline

	Question Type	Question
1-4	Background	(a) age; (b) country of origin; (c) native language; (d) educational background.
5	Opinion	For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.
6	Current Experience	What is the most difficult thing for you when you write in English?
7	Current Experience	What is the most enjoyable thing for you when writing in English?
8	Current Experience	How comfortable are you when working with computers?
9	Past Experience	How were computers used at your previous school(s)?
10	Past Experience	Did you use computers to communicate with other people (chat, email, list serves) before this class?

Table 4.3 (Continued)

Interview Questions Outline

	Question Type	Question
11	Opinion	You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?
12	Feelings	How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?
13	Current Experience	Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?

Table 4.3 (Continued)

Interview Questions Outline

	Question Type	Question
14	Opinion	Do you think CMC activities are good for learning how to write better? Please explain your opinion.
15	Current Experience	Did you include in your writing some of the ideas that your partner shared with you?
16	Current Experience	When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?
17	Current Experience	Did you find that your typing skills hindered your discussion on-line?
18	Current Experience	Did you use anything additional – an electronic dictionary, the Internet, a regular dictionary, when writing your messages?

Attitudes Towards Writing

Three of the questions (5-7) addressed students' attitudes towards writing. These questions elicited students' opinion of the importance of being a good writer as well as difficult and enjoyable aspects of writing. Question 5 (*For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*) was answered by 44 students. Question 6 (*What is the most difficult thing for you when you write in English?*) was answered by 45 students. Question 7 (*What is the most enjoyable thing for you when writing in English?*) was answered by 43 students. The themes identified in the students' answers are presented further.

Six distinct themes related to the importance of developing good writing skills were identified in the interviews of the students: (1) writing for further studies, (2) writing for communication; (3) writing as being related to other language skills, (4) writing related to future and current career, (5) writing as part of everyday life, and (6) writing to share personal experiences. The highest number of students (39, 88.64%) perceived that good writing skills are important because of the necessity to communicate effectively. There were 16 students (36.37%) who related their academic goals to the formation of good writing skills. While eight students (18.18%) indicated that writing is important for their future or current career. For example in the answer of one of the participants the last two themes were combined: "*In my opinion the importance to be agood writer that its give you alot of benefits in alot majors in your life for example if you wana apply for a jop u must pic the properate words in your C.V ,also if u wana apply collage or university they required alot off homeworks and projects to do so u will need alot of academic vocobulary and the most simple thing if you wana say your theory in*

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any subject in life or to write a letter for formal place." (Here and thereafter students' spelling and punctuation is preserved unchanged.) Writing was closely related to the development of other language skills such as reading and speaking by 12 students (27.27%). One of the participants shared in her interview answer: "*i think its very important because i am learning english as a language so i can not seperate speaking and writing because they complete eash other ...*" Lastly, two students (4.55%) indicated that good writing skills are important for everyday life. In the answers of these two students, this theme was combined with at least one another theme such as importance of writing for academic and career purposes. For example, in her interview answers, one participant combined the theme of writing as an important communication medium and the theme of the importance of writing in everyday life:" *transmite aned communicate ideas, opinions to other people in a clear and accuracy way... good writing lets me to have better communication skills and improve my perfomance not only in my studies but also in the real life.*"

When sharing their difficulties with writing in English, most of the students pointed out features related to the surface aspect of writing such as grammar, including translation from L1 (23, 51.11%), spelling (26, 57.78%), and vocabulary (27, 60 %). For example, one of the students shared the following about his difficulties related to writing in English: "*when I write in English, I am the most difficult translation for me from korea to English because English has oppositely construction sentence.*" Another student stated: "*the most difficult thing is writing passive voice sentences.*" Still a third one posted a short answer to the question about the difficulties he experienced when writing in English: "*spiling and gramer.*"

Few students expressed awareness of difficulties related to text organization and clear representation of ideas (6, 13.33%). One of the students shared the following in her interview: "*The most difficult thing is write correctly. Using the appropiate words, transitions and with a good organization.*" In her posting she addressed both grammar difficulties and difficulties related to text organization.

The enjoyment from writing triggered various response from the students with the highest variety of themes. However, it is important to note that the highest number of students (18, 41.86%) avoided answering this question. Which could be contributed to the difficulty to think of positive aspects related to writing or having difficulties formulating them.

Learning how to write better in English and control the text was a theme shared by 10 (23.25%). One of the students explained his positive attitudes towards writing in the following way: *"Many things* [are enjoyable for me when writing in English] – *I like to learn it."* Another stressed that she enjoyed when she can control her writing: "[I like] *To see it ready and to see my ideas on paper.*"

Seven students perceived as most enjoyable writing about personal experiences (16.28%). One of them stated directly:" [I like] *To describe something about my experience.*" Another posted in her interview answer: "*The most thing i like in writting that i can put every thougt in the paper.*"

Communicating through writing was a theme identified in six of the participants' interviews (13.95%). One participant stated: "*If I can delivery my idea to the people, and I can effect to the people so I make change.*" A similar answer provided another

participant in her interview posting: "*I can learn more and more vocabulary and let the other know what is my opinion.*"

Receiving feedback (2, 4.65%) was one of the themes. The students who shared this perspective on the positive aspects of writing in English shared in the interview: "*can have a beedfack of my writting, and that is a good sign to continue writing...*" and "*My bigest joy in writing english is that I realize that I'm in the way to reach my goal by practicing, for I know that as soon as I'm writing things and my teacher is correcting me...*"

Mastering vocabulary was yet another theme related to positive aspects of writing in English. One of the participants stated in the interview: "*when I write in English, I am the most enjoyable thing is leaned the new word.*" This theme was indentified in two (4.65%) of the interview answers.

There were several themes related to positive aspects of writing which were identified in the interview answers of individual students: chatting (1, 2.33%), being creative (1, 2.33%), writing a coherent text (1, 2.33%), and the challenge of writing in English (1, 2.33%). There were also three students (6.98%) that explicitly indicated that nothing is enjoyable for them about writing, and one (2.33%) that stated that the only enjoyable thing having to do with writing was to write his name using Roman script.

Computer and CMC Related Experiences

It appeared that all of the students who answered the question about their computer experiences (42), except for three (7.14%), had somewhat established computer skills prior to the semester in which the data were collected. This conclusion was made based on their answer to Question 9 (*How comfortable are you when working with computers?*).

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The majority of the students (39, 92.86%) answered that they were either comfortable or very comfortable when working on a computer, that they love and prefer working on a computer. One of this experienced computer users stated:" *I will* [be] *uncomfortable if no computers can be used anymore.*" Whereas 22 (47.83%) out of 46 also stated that computers were used for various academic tasks such as presentations, homework completion, software design (Question 9), 10 (4.6%) did not use computers in their education prior to enrolling in the ELI. Seven (15.28%) of the students who had not used computers for academic purposes identified themselves as being comfortable or very comfortable; they used verbs such as "*like*" and "*love*" to describe their attitude towards computers.

Almost all students (39, 95.12%) who answered Question 10 (*Did you use computers to communicate with other people (chat, email, list serves) before this class?)* shared that they had used computer mediated communication to stay in touch with friends and family. In addition, three students (7.32%) also stated that they had used CMC for professional communication, whereas none of the participants had used CMC as a medium for the completion of educational tasks. There were three (7.32%) students who indicated low level of comfort when working on computers; two (4.88%) of these students also indicated that they had not used CMC prior to the semester in which data were collected. The third student with low computer skills was a continuing student; thus, she acquired some CMC skills at the IEP in the previous semester as part of her studies.

CMC Interaction and Task Perception

When asked about their perception of the pre-writing CMC task, 50 students answered. The majority of them (42, 84%) perceived the task to be helpful for their

writing. For example, one of the students shared the following: "*On my opinion, it is helpful. When I discussioning activity, I can get more information and different opinions for other people.*" Another one shared: "*the on-line discussion activity was very helpful to me in writing my paragraph, because most the ideas from the pictures have already been discussed between us together so it made it more easy for writing the paragraph.*"

Four of the students (8%) recognized explicitly the positive role of their partners; the fact that the discussion promoted the generation of more ideas and better understanding of the topic was mentioned by seven students (14%). Two (4%) students stated that the CMC format was something that made the task better. Two (4%) students mentioned that the CMC format of the discussion allowed them to revisit the discussion and see errors. One student (2%) admitted that her perception was that she and her partner generated fewer ideas but the discussion was useful for the completion of the writing task. Three of the students (6%) indicated that they found the task useful but time consuming. Two students (4%) expressed positive attitude towards the CMC discussion but stated that they would prefer to talk about the task.

There were eight students (16%) who stated that they did not like the pre-writing CMC discussion. Four of them were from the ACMC group and four from the SCMC group. In her interview, one of the participants shared the following: "*Talking about pictures was a little bit difficult. The problem does not concern the way of talking about it (on ESLS with a computer) but it concern the pictures themselves that were not easy to understand. Most of them, at the first sight, weren't in a direct relation with the topic. Anyway, I prefer to talk about pictorial things in front of a person because I can use physic interactions to explain what I thing to my partner.*"

Three of the participants – 6% (two from the ACMC group and one from the SCMC group) perceived the topic discussion with a partner to be unnecessary because they would prefer to work on the writing task alone. One of them (1%) added that the teacher's feedback, not their partner's, was what he would value more. Two students (ACMC, 4%) stated that they would prefer to talk rather than post messages. For example, one of the students expressed the following: "*I was uncomfortable because I can not use computer very well. In class I can not speak if I want. In computer I have to.*" One of the students (SCMC, 2%) did not feel comfortable during the task completion because of her partner who showed disrespect during the discussion. Lastly, one student (ACMC, 2%) stated that the task was boring, and there was not enough time to discuss it.

A total of 49 students answered the question which addressed the inclusion of their partner's ideas in the subsequent paragraph. Most of the students (36, 73.47%) answered that they used the ideas of their partners. Eleven of those students (22.45%) explicitly stated that they used the interaction log during their writing.

Some students (6, 12.24%) reported that they used only their ideas when writing. Five of these students completed their discussion asynchronously via ICA2 and four of them demonstrated a dominant dyadic pattern, which constituted 16.67% of the dominant participants. The other two students, who stated that they did not use their partners' ideas were collaborative participants (6.90% of the collaborative participants). Thus, the group of learners who were reluctant to use their partners' ideas participated predominantly in an ACMC mode of communication (five out of six) and there were more dominant (4) than collaborative participants (2) among them.

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CMC Interaction – Tools and Typing

When asked if they used anything additional during the CMC discussion – an electronic dictionary, the Internet or a regular dictionary – the majority of the students answered negatively (23 - 62,79%). One student from the SCMC group (4.35%) explicitly stated that there was no time for using anything additional to support the discussion, another from the ACMC group (4.35%) stated that, in general, he used a dictionary but did not use it for this task. The rest of the students (91.31%) who stated that they used nothing to support their discussion did not provide any additional comments. From the ACMC group, nine students used dictionaries, either online, electronic or hard copy, whereas in the SCMC group the number of students using dictionaries was seven.

When asked if the CMC interaction was slowed down or hindered by their typing skills, the majority of the ACMC participants – 14 out of the 23 students who answered this question (60.87%) – stated that their interaction was not hindered. Nine (39.13%) shared that they had difficulties with typing. Six out of the 21 SCMC participants who answered this question (28.57%) indicated that typing was a problem during their chat pre-writing session.

The Low Computer Skills Proficiency Students

The three students – one male, Sam (46) from Haiti, and two females, Shin (38) from Korea, and Anna (40) from Russia – who indicated lower computer skills were older than the majority of the students. The mean age of the participants was 25.55. These lower computer proficiency students shared that they felt as if they were in the process of mastering computer skills. In her interview, Anna stated: "*I was too scared when I was*

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working with computers, today in ELI I really happy to do exercise with computers because I hope improve my computer skills." The positive attitude towards the progress with computers was similar with the other two students. All three of them participated in the extracurricular computer workshops offered in the program; in addition Anna shared in a personal conversation that she asked her husband, who was a computer programmer, to show her how to use various computer functions.

All three were part of the ACMC treatment group. They had an overall positive perception of the CMC pre-writing task. Anna and Sam explicitly indicated their positive experience during the task completion. They felt that the CMC pre-writing interaction helped them to prepare for their writing, and Anna indicated that the pre-writing task had also a positive influence on the development of her computer skills. Shin stated that she did not feel comfortable when completing the task because of the computer. Nevertheless, she found that sharing ideas with her partner helped her later to write her paragraph.

These students demonstrated different degree of gain as identified based on the difference of the pulled z-scores of the eight measures used for the paragraph analysis of the pre-treatment paragraph, completed after a face-to-face pre-writing discussion, and the post-treatment paragraph, completed after the CMC pre-writing discussion. In her post-treatment writing scores, Shin had the lowest gain among all participants. This gain was -6.06133, with group mean gain score 0.144566553. Her partner, a student who indicated a high comfort level with computers, had a positive gain (1.1454). Anna also had a negative gain (-3.4937), with partner's gain 0.716673. Only Sam had a positive

gain 3.869812, with partner's gain 10.46247. Sam's gain was ranked fifth among all participants in the study, while his partner had the highest gain of all participants.

Anna and Sam demonstrated collaborative patterns of dyadic interaction during the ACMC pre-writing task completion. They participated in the interaction with awareness and consideration of their partners' opinion, ability to build on their partners' ideas and propose their own original ideas. Shin, however, politely recognized her partner's contribution but explicitly stated that she would write her paragraph based on her opinion; she and her partner failed to discuss each other's ideas.

Qualitative Stage Summary of Results

When analyzing the qualitative data, three qualitative questions were addressed: (1) What are the students' perceptions of the role of CMC in the process of establishing their writing skills? (2) What patterns of dyadic interaction do participants manifest during the asynchronous and synchronous CMC interaction process? (3) What are the factors that influence the CMC pre-writing interaction process? How do these factors influence the interaction process? Following is the discussion of each research question based on the outcomes of the qualitative data analysis.

The Role of CMC: Students' Perceptions

Qualitative Research Question 1 addressed students' perceptions of the role of CMC in the writing process. Based on the themes identified in the interviews, most of the students found that the pre-writing CMC discussion supported the writing of their first paragraph drafts. This support was qualified in various ways. The students perceived that they generated ideas and understood better the topic of the written assignment due to the discussion. The majority of these students reported that they incorporated their partners'

ideas into their paragraphs. The students also shared that the written format of the discussion supported their paragraph writing. This format provided them with the opportunity to review the discussion and see their errors. Some of the students explicitly stated that they revisited the CMC interaction logs while writing their paragraphs. However, there were students who perceived as more appropriate to incorporate only their own ideas into the paragraph. The majority of these students participated in an ACMC discussion and demonstrated dominant patterns of interaction.

Four main reasons for the CMC pre-writing being unnecessary were pointed out in the interviews. The first two were directly related to the format of the discussion: students experienced difficulties formulating ideas in a text-based environment and the text-based mode of communication was time-consuming. These two opinions were prevalent among the students who expressed negative attitude towards the pre-writing discussion. The other two reasons were not related directly to the CMC format of the discussion and were also shared by a lower number of students: teacher feedback was identified as more valuable than interactions with peers, and writing was defined as an individual activity that does not require peer collaboration.

Patterns of Dyadic Interaction

Qualitative Research Question 2 focused on the patterns of dyadic interaction in a CMC environment as identified based on the analysis of the CMC pre-writing discussion logs. The patterns of dyadic interaction observed in the CMC discussions in this study corresponded with the model of dyadic interaction proposed by Storch (2002). However, based on the outcomes of this study it could be concluded, that the patterns of dyadic interaction were strongly influenced by mode of interaction. The synchronous discussion

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promoted opportunities for more collaboration, whereas the asynchronous discussion, although providing opportunities for collaboration, led to more dominant patterns. Further, there were interactions in which students would demonstrate a different level of engagement with each other's contribution, identified as a mutuality mismatch. This different level of engagement was more evident in the ACMC group. Another specific of the CMC interaction also observed mostly in the ACMC group was that students would abandon the discussion despite their partners' request for contribution, or both participants would post only once and would not engage in further discussion. This disengagement pattern could be attributed to the less dynamic nature of the ACMC interaction as well as to the less structured environment in which the interaction took place.

Factors Influencing the CMC Pre-writing Interaction

In this section, Qualitative Research Question 3 is addressed. In order to identify the factors that influenced the CMC pre-writing interaction process, several sources of data were considered: prior and post-treatment computer laboratory observations, the dyadic patterns of interaction identified based on the CMC logs, and interview outcomes. Several factors that influenced the CMC interactions were identified: (1) the use of computer as an interaction medium, (2) CMC mode of interaction, (3) partner interaction, and (4) opinion of the nature of writing. Discussion of each one is presented below.

The Use of Computer as an Interaction Medium

During the computer laboratory classes, almost all students who participated in this study demonstrated sufficient computer skills; in the interviews, they also reported being exposed to computers and CMC. Most of the students used computers to prepare

presentations, write papers, and work on projects. Further, they were involved in CMC interactions for personal reasons predominantly in their native language; only a few of them had used CMC for work-related tasks. None of them reported using CMC for academic tasks requiring problem solving. Thus, whereas their computer skills were somehow developed, the lack of experience related to problem solving via CMC may have affected their interaction. However, more specific interview questions addressing this issue as well as in-depth analysis and comparison of interaction of students with and without CMC problem solving experience would shed more light on this particular problem.

In their interviews, some students shared that they experienced difficulties related to typing skills as well as difficulties expressing themselves in a text-based environment. These difficulties made the CMC interaction more time-consuming and challenging. Further, during the computer laboratory observations, the researcher noted that many students would attempt to work on the computer only after taking handwritten notes, which suggests that they were less likely to use the computer in the early stages of the writing process.

There were three participants in the study who had limited computer skills. The analysis of their interactions showed that two of them were able to engage in collaborative pre-writing discussion via ACMC. The third student, who also performed her interaction in an ACMC dyad, demonstrated a dominant pattern. The two students who demonstrated collaborative patterns of interaction also expressed positive attitudes towards the CMC pre-writing discussion task, whereas the third student, who demonstrated dominant discussion pattern, stated that she did not like the task and would

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prefer talking about the pictures. Therefore, based on these particular cases, it could be suggested that even relatively short exposure (in this case four weeks) to computer-based tasks performed in an academic environment and additional support through extracurricular workshops could be useful for students and would allow them to perform and benefit from pre-writing and writing tasks using computers.

The Mode of CMC Interaction

The mode of CMC interaction was the most dominant factor that influenced the pre-writing discussion. The ACMC and the SCMC interactions analyzed in this study differed significantly in terms of language quality and quantity. These interactions differed in terms of dyadic patterns as well.

The language produced by the participants in the two modes of interaction differed in several ways. The ACMC mode triggered postings that used longer strings of words often organized in complete sentences, whereas in the SCMC interactions, the electronic utterances were much shorter and did not always comprise complete sentences. However, the number of unique words in ACMC interactions was lower as compared to the SCMC interactions. Further, the SCMC interactions generated longer discussions, with higher number of posting, therefore the learners had more opportunities to generate and interact in the target language.

When working in an SCMC mode, students demonstrated a stronger tendency to collaborate with each other, whereas the ACMC mode led to more dominant patterns of interaction. In addition, the interaction patterns of the same type were demonstrated in a different way depending on the mode of CMC. The collaborative students in ACMC mode attempted to contribute to the discussion with longer postings demonstrating

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multiple collaborative moves in one posting such as answering their partner's question, presenting their opinion, and directing the task. In the SCMC discussions, these moves were frequently spread out through separate postings.

The dominant students who communicated via ACMC would more often abandon the discussion space after posting once, whereas the dominant students from the SCMC group would make several postings but would demonstrate inability to engage into a discussion with their partner. No Expert or Novice patterns were observed with the ACMC postings. It might be inferred that they were transferred to Dominant and Passive patterns due to the less dynamic nature of the ACMC interaction, thus creating mutuality mismatch. On the contrary, in the SCMC interactions, the immediate contact with the discussion partner in addition to the mutual time space presented a higher participation demand and partner consideration, which led to fewer instances of mutuality mismatch.

Based on these outcomes, it could be suggested that the asynchronous discussion was less likely to trigger a dynamic exchange with active negotiation as compared to the synchronous interaction; as a result, it is possible for students who participate in this type of interaction to be less susceptible to considering the contribution of their partners. Further, students who were dominant in their ACMC discussions might have been more inclined to ignore their partners' contribution. However, the students who participated in the ACMC discussions wrote longer sentences, frequently organized their postings in an outline or even a paragraph format, which allowed them to approximate the paragraph organization and support.

Partner Interaction Style

The partners' interaction style during the discussion also strongly influenced the way the CMC discussion task was completed. The inability or the unwillingness of one of the partners to engage in the interaction resulted in interactions that would not develop completely the topic. These interactions were less coherent and tended to demonstrate unequal levels of partner engagement. Further, in their interview students shared that their partners' contributions influenced strongly the interaction.

Opinion on the Importance of Writing

In the interviews, the majority of the students shared that good writing skills were important for the reason that writing was a communication medium. This seems to relate to students' overall positive opinion about the pre-writing CMC discussion task. There was no relation found between patterns of dyadic interaction and attitudes towards writing in the group of students who expressed overall positive opinion about writing. However, there was a relation between the dyadic pattern of interaction and the less prevalent view shared by students on writing as an individual experience that does not require peer collaboration and should be supported by the teacher's guidance. The students who expressed this view did not engage in a discussion with their partners and demonstrated a dominant pattern of interaction.

In the following sections of this chapter, the results of the quantitative stage are presented. They are discussed in the context of the specific quantitative research questions posed in the study. Further, the additional analysis and findings triggered by the nature of the CMC discussions identified in the qualitative stage are presented and discussed.

Quantitative Stage: Analysis and Results

In this section, the results of the text analysis of the post-treatment paragraphs are presented and discussed. The texts produced by students were analyzed based on eight criteria, namely: (1) syntactic complexity (measured by calculating the mean length of T-units), (2) amount of information present in a single focus (measured by mean length of idea units), (3) quantity of overall information present (measured by the number of idea units), (4) lexical information per clause (measured through lexical density analysis), (5) vocabulary complexity (measured by analyzing the frequency of the unique words used), (6) rhetorical soundness, (7) presentation and development of main ideas, (8) and overall language use (the last three criteria were assessed using a multiple trait rubric). The inferential statistical analysis was performed using SAS® (SAS Institute, Inc., 2004). For each of the first five criteria, analysis of covariance was performed with covariates the corresponding measures obtained from the students' pre-treatment paragraphs produced before the treatment CMC pre-writing discussions on a different topic. The last three criteria were analyzed using Mann-Whitney U test.

As stated in Chapter III, in order to assure independence of the scores, the unit of analysis for each of the above stated tests was a dyad. For each dyad the mean scores for every measured criterion were calculated. These mean scores were then compared accounting for the mode (asynchronous versus synchronous) of the CMC pre-writing discussion of the assigned topic and using as a covariate the corresponding scores obtained from their pre-treatment writings.

Comparing the ACMC and the SCMC Groups

A total of 60 participants that worked in 30 dyads were considered for the study. Although 103 students were enrolled during the two semesters in which the data were collected, complete data sets were obtained for 30 dyads, 17 ACMC dyads and 13 SCMC dyads. The two groups were compared in terms of participants' educational background, age, and gender. This comparison was performed in order to assure that the two groups did not differ significantly. Following are the results of this background data analysis. All statistical analysis reported further were performed using SAS® (SAS Institute, Inc., 2004).

Group Comparison: Age

The participants in the current study ranged in age from 17 (1) to 46 (1). The mean age was 25.55 with median ages 25 (8) and 26 (8). The majority of the participants were in their late teens or early twenties (31).

The two groups were compared in terms of their age. In order to perform this comparison, a two-tailed *t*-test was conducted. The mean age of the ACMC group was 26.44 years ($SD = 6.40$) and the SCMC group's mean age was 22.29 ($SD = 4.07$). The Null Hypothesis was that age means of the two groups did not differ significantly.

The test failed to reject the Null Hypothesis at $\alpha = .05$ level of significance, $t(58) = 1.34$, $p = .19$. The Mean age difference was 2.06 at 95% confidence interval (-1.05, 5.14). Based on these results, the researcher concluded that the probability of one of the groups to having a higher mean age as compared to the other is high. In other words, the two groups did not differ significantly in terms of their mean age.

Group Comparison: Educational Background

The two groups were compared also in terms of their educational background. According to the application requirements at the IEP, all prospective students should have at least a high school diploma. Based on the interview outcomes, the researcher identified three distinct groups of participants: (1) students who have graduated from high school; (2) students who completed their high school education and had at least one semester of college education, and (3) students who had obtained their college degree – either a bachelor degree (or its equivalent) or a master's degree (or its equivalent) – and/or were working prior to their enrollment at the IEP. The descriptive statistics revealed that the highest number of participants (31) already had their college or higher degree earned prior to enrolling to the IEP. The participants who were in the process of working on their college degree were 17, and the ones who enrolled in the IEP with a high school diploma were 12. Table 4.4 presents the participants in terms of their education and group assignment.

Table 4.4

Participants' education level and group assignment

Group Assignment	ACMC	SCMC	Total
High School Diploma Only	6	6	12
College in Progress	10	7	17
College Degree Obtained	18	13	31
Total	34	26	60

In order to proceed with further statistical comparison of the groups, the researcher had to collapse educational level one (high school) and two (college) into one – Pre-College/College. This decision was made due to the small sample size. The decision to collapse these two levels was based on the fact that the majority of the students who already received their college degree were professionals with starting or already established careers; thus, it was viewed that the college level group would be more similar to the high school level group in terms of their educational background. Consequently, two levels were considered for further comparison analysis of the ACMC and the SCMC groups: (1) Pre-College/College and (2) Post-College level. The groups were compared in terms of the odds of a participant of a particular educational level to be assigned to a particular group (ACMC or SCMC). The results of the odds ratio analysis showed no statistically significant difference between the two groups in terms of educational level (OR = 1.6154; 95 % CI = 0.57, 4.54).

Further, the groups were compared using Fisher's Exact Test. Before proceeding with the test, the following assumptions were reviewed, and the researcher concluded that they were met: (1) random sample from population, (2) no single data point equals zero; (3) all observations independent from one another. As assessed with Fisher's Exact Test, at the wide 95% confidence interval for relative risk, with an obtained two-sided $p = .43$, there was no association of student education level and CMC group assignment. In other words, the two groups did not differ significantly in terms of education level.

Group Comparison: Gender

The descriptive statistics of the background participants' data revealed that there was a higher number of male participants in the current study: 36 (60%) of the

participants were male. The groups were compared in terms of the odds for a participant of a particular gender to be assigned to a particular group (ACMC or SCMC). The results of the odds ratio analysis showed no statistically significant difference between the two groups in terms of gender (OR = 0.6364; 95 % CI = 0.22, 1.8070). The number of participants, as assigned randomly to ACMC and SCMC groups and consequently to dyads, is presented in Table 4.5.

Table 4.5

Dyad Assignment by Group

ACMC Group Dyad Assignment				SCMC Group Dyad Assignment			
Mixed Gender	Same Gender		Total	Mixed Gender	Same Gender		Total
	Males	Females			Males	Females	
10	6	1	17	8	3	2	13

Next, the groups were compared in terms of the odds of a participant to be assigned to a mixed or the same gender dyad for the ACMC and the SCMC group. The results of the odds ratio analysis showed no statistically significant difference between the two groups in terms of assignment to a mixed- or the same-gender dyad (OR = 0.8929; 95 % CI = 0.20, 3.91).

Further, the groups were compared using Fisher's Exact Test. Before proceeding with the test, the following assumptions were reviewed, and the researcher concluded that they were met: (1) random sample from population, (2) no single data point equals zero, and (3) all observations independent from one another. As assessed with Fisher's Exact Test, at the wide 95% confidence interval for relative risk, with an obtained two-sided $p =$

1.00, there was no association of dyad gender composition and CMC group assignment. In other words, the two groups did not differ significantly in terms of gender composition at a group and a dyad level.

Group Comparison: Pre-Treatment Writing Score

The pre-treatment paragraphs written by the students from the ACMC and SCMC groups were compared in order to evaluate how similar the two groups were in terms of writing skills. Five of the proposed measures were presented with continuous scores; thus, they were analyzed using five separate exact *t*-tests. These measures were as follows: (1) syntactic complexity (measured by calculating the mean length of T-units), (2) amount of information present in a single focus (measured by mean length of idea units), (3) quantity of overall information present (measured by the number of idea units), (4) lexical information per clause (measured through lexical density analysis), (5) vocabulary complexity (measured by analyzing the frequency of the unique words used). Three of the measures, namely: (6) rhetorical soundness, (7) presentation and development of main ideas, (8) and overall language use used ordinal scores; they were analyzed applying three separate non-parametric two-tailed Mann-Whitney U tests. The descriptive statistics for each of the pre-treatment measures are presented in Table 4.6. Following are the results of the proposed comparison of the two groups.

Table 4.6

Pre-treatment scores: Descriptive Statistics

	Measure	n	M	SD	Skewness	Kurtosis
1	T-units Scores (Syntactic Complexity)					
	ACMC	17	11.75	2.90	1.20	1.19
	SCMC	13	11.89	1.31	-0.19	-0.69
2	Mean length of idea units (amount of information present in a single focus)					
	ACMC	17	7.72	0.99	0.41	1.38
	SCMC	13	7.65	0.63	0.07	-1.26
3	Number of idea units (quantity of overall information present)					
	ACMC	17	17.65	8.86	2.31	6.87
	SCMC	13	18.15	5.60	0.47	-1.56
4	Lexical density (lexical information per clause)					
	ACMC	17	4.32	0.80	0.58	0.02
	SCMC	13	4.74	0.82	-0.22	-1.28

Table 4.6 (Continued)

Pre-treatment Scores: Descriptive Statistics

	Measure	n	M	SD	Skewness	Kurtosis
5	Vocabulary complexity (frequency of the unique words used)					
	ACMC	17	0.43	0.14	1.15	1.54
	SCMC	13	0.36	0.08	0.80	0.56
6	Rhetorical soundness					
	ACMC	17	13.58	23.44		
	SCMC	13	18.00	23.44		
7	Presentation and development of main ideas					
	ACMC	17	12.82	22.72		
	SCMC	13	19.00	22.72		
8	Overall language use					
	ACMC	17	15.88	22.94		
	SCMC	13	15.00	22.94		

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The ACMC and SCMC groups were treated as two separate populations. The goal of the exact *t*-test was to confirm or reject the Null Hypothesis. Failing to reject the Null Hypothesis would indicate that the means of the two groups do not differ significantly.

Before conducting the *t*-test, the researcher carefully examined the following assumptions and concluded that they were met: (1) independence of the groups, (2) normal distribution of the sample means, and (3) equal or similar variance of the two groups. The random assignment of the participants to either ACMC or SCMC group and the consideration of the mean pair scores rather than individual scores assured the compliance with the first assumption. The Shapiro-Wilk W at the alpha=.05 level allowed to the researcher to conclude with 95% confidence that there was sufficient evidence that the means were normally distributed for both groups for three of the measures: (2) mean length of idea units (ACMC W=.82, SCMC W=.28), (4) lexical density analysis (ACMC W=.49, SCMC W=.45), and (5) vocabulary complexity (ACMC W=.07, SCMC W=.64).

However, two of the measures revealed non-normal distribution. For measure (1), mean length of T-units, the scores of the ACMC group were non-normally distributed (W=.03), while for the SCMC group the distribution was normal (W=.92). For measure (3), number of idea units, both groups had non-normally distributed scores (ACMC W=.0007, SCMC W=.03). After examining the data, the researcher identified extreme scores for the ACMC group for both measures: mean length T-units and number of idea units. These extreme scores were examined, and it was concluded that there was no error in the score calculation.

The normality of the data sets was again tested without the extreme observations which showed that their exclusions led to normal distribution: for measure (1), mean

length of T-units, ACMC group (W=.10), and measure (3), number of idea units, both groups had normally distributed scores ACMC W=.23. However, there was one more non-normal distribution identified: for the SCMC group on measure (3) number of idea units, W=.03. The researcher examined the data, and did not find any outliers or extreme observations.

The researcher decided to proceed with the *t*-test with this data set. This decision was based on the following considerations: the detected non-normal distribution was only in one of the groups, and the normality was slightly below .05. The overall data set distribution was normal (W=.07). In addition, the *t*-test is considered to be relatively robust to normality violation (Glass & Hopkins, 1995). Thus, the independent two-tailed *t*-tests for each measure with non-normal distribution was performed with and without the ACMC extreme observations, and in both cases, the results were not statistically significant. Therefore, the researcher decided to proceed by reporting the results of the *t*-tests including the extreme observations. This decision was made based on the following: (1) the two groups were perceived to be two separate populations for this particular test, (2) the *t*-tests on these measures conducted without the extreme observation did not change the way the Null Hypotheses were interpreted, and (3) the *t*-test is perceived to be robust to violation of normality (Glass & Hopkins, 1995). Finally, the probability *F* values for each of the proposed measures were obtained; which allowed the researcher to conclude that the groups' variances were equal or similar and allowed to make the decision which variance to use when interpreting the outcomes. The *F* values are reported in Table 4.7 along with the results of the *t*-tests for each proposed measure.

The researcher did not anticipate either of the two groups to have higher scores on any of the proposed measures; thus, five two-tailed independent t-tests were performed. Each of the t-tests failed to reject the Null Hypothesis. Thus, no significant difference between the means of the proposed measures for the ACMC and SCMC groups was detected. The outcomes of the five t-tests conducted are presented in Table 4.7.

Table 4.7

Pre-treatment t-test: Statistics and Outcomes

Measure	DF	Null Hypothesis, $\alpha = .05$	Probability P, $\alpha = .05$	Variance
1 T-units Scores (Syntactic Complexity)				
ACMC	23.5	Failed to reject	.08	Unequal
SCMC		(p=.86)		
2 Mean length of idea units (amount of information present in a single focus)				
ACMC	16	Failed to reject	.11	Equal
SCMC		(p=.81)		

Table 4.7 (Continued)

Pre-treatment t-test: Statistics and Outcomes

Measure	DF	Null Hypothesis, $\alpha = .05$	Probability *P*, $\alpha = .05$	Variance
3 Number of idea units (quantity of overall information present)				
ACMC	28	Failed to reject	.11	Equal
SCMC		(*p*=.85)		
4 Lexical density (lexical information per clause)				
ACMC	28	Failed to reject	.89	Equal
SCMC		(*p*=.17)		
5 Vocabulary complexity (frequency of the unique words used)				
ACMC	26	Failed to reject	.05	Unequal
SCMC		(*p*=.10)		

The group comparison as based on the three ordinal measures – (6) rhetorical soundness, (7) presentation and development of main ideas, and (8) overall language use – used ordinal scores and was performed using the non-parametric Mann-Whitney U test.

For each of the Mann-Whitney U tests conducted, the Null Hypotheses failed to be rejected at 95% confidence level. Following are the p-values obtained in the comparison of the two groups on each of the proposed measures: (6) rhetorical soundness – $p=.18$, (7) presentation and development of main ideas – $p=.06$, and (8) overall language use – $p=.79$.

The researcher concluded that there is no significant difference between the two groups when their pre-treatment draft paragraphs were compared by the eight measures proposed for the study. Therefore, it was concluded that if any changes are detected in the comparison of the post-treatment writing scores of the two groups, they can be attributed to the treatment. The following section presents the post-treatment data analysis and results.

Post-treatment Data Analysis and Results

The post-treatment data was analyzed using analysis of covariance (ANCOVA) method of statistical analysis for the five continuous measures used in the study while the three ordinal measures were analyzed applying three separate Mann-Whitney U tests. When performing the five ANCOVA tests, using accordingly adjusted α ($\alpha=.05/5$), the possibility of not finding statistically significant effects was high, even though if each of the analyses were performed separately or fewer ANCOVA tests were conducted, at least one of the effects could be detected (Onwuegbuzie & Levin, 2005). Thus, in order to avoid this limitation, the Three-Step Approach for Testing Multiple Univariate

Hypotheses proposed by Onwuegbuzie and Levin (2005) was applied. This led to the analysis of the pulled z-scores from all variables in order to compare the ACMC and SCMC groups. The following sections present each of the listed analyses and the obtained results.

ANCOVA Analysis of Post-treatment Writings

In ANCOVA, the analysis of variance is combined with regression analysis by adding a concomitant variable (covariate). The goal of utilizing analysis of covariance is to attempt to control statistically for differences that existed before the treatment was implemented for the ACMC and SCMC groups (Onwuegbuzie & Daniel, 2003). In this study, five separate ANCOVA tests were administered for the five continuous variables. In order to avoid the high probability of inflating the Type I error (rejecting the H_o when it is true) for each statistical test a Dunn-Bonferroni-reduced α (α_{ew}) was used (Onwuegbuzie & Levin, 2005). Each test aimed to answer one quantitative research question. The following Null Hypotheses were tested: there is no difference between the means of the ACMC and SCMC groups when compared by the proposed measures.

For each ANCOVA test, the following assumptions were examined carefully: (1) the independence of the observations, (2) equal or similar variance of the two groups, and (3) normal distribution of the sample means (Glass & Hopkins, 1995). The independence of observations was assured through the random assignment of participants to either the ACMC or SCMC group within each class section that participated in the study. Further, the participants were randomly assigned to pairs which performed the pre-writing discussions. In order to obtain final independent score, for each pair the post-treatment score on each measure was calculated. This score was used for statistical analysis. The

probability F values for each test were examined and equal or similar variance of the groups was confirmed. The normal distribution of the sample means was assured through the analysis of the Shapiro-Wilk W values for each of the measures. This analysis revealed that three out of the five measures had values lower than the SAS default level of significance, $\alpha = .05$. Examination was undertaken to find out if extreme observation(s) was/were affecting the distribution. The extreme scores were eliminated from the data set; this led to normal distribution of the data sets as suggested by the analysis of the Shapiro's W parameter. Table 4.8 presents the descriptive statistics for each ANCOVA data set; for the three measures with non-normal distribution, the values with and without the extreme data sets are listed.

Table 4.8

Descriptive Statistics: ANCOVA Datasets

	Measure (with /without extreme observations)	n	M	SD	Distribution	Shapiro's W
1	T-units Scores (Syntactic Complexity)	30/29				
	ACMC (with /without extreme observations) – extreme observation # 15 excluded	17/16	12.77/12.26	2.58/1.57	Non-normal/	.0002/.10
	SCMC	13	12.78	1.1	Normal	
2	Mean length of idea units (amount of information present in a single focus)	30/29				
	ACMC (with /without extreme observations) – extreme observation # 15 excluded	17/16	8.57/8.36	1.07/0.64	Non-normal/	.006/.92
	SCMC	13	8.05	0.83	Normal	

Table 4.8 (Continuing)

Descriptive Statistics: ANCOVA Datasets

	Measure (with /without extreme observations)	n	M	SD	Distribution	Shapiro's W
3	Number of idea units (quantity of overall information present)	30/28				
	ACMC (with /without extreme observations) – extreme observation # 7 and 13 excluded	17/15	18.35/16.07	7.35/3.74	Non-normal/Normal	.008/.56
	SCMC	13	19.36	4.90		
4	Lexical density (lexical information per clause)	30				
	ACMC	17	4.32	5.20	Normal	.09
	SCMC	13	4.74	5.40		
5	Vocabulary complexity (frequency of the unique words used)	30				
	ACMC	17	0.40	0.11	Normal	.45
	SCMC	13	0.06	0.13		

The ANCOVA was conducted with both data sets: the complete data set and the data set from which the extreme observation was eliminated. Neither ANCOVA test showed statistically significant difference between the groups; thus, it could be concluded, that the non-normal distribution of the data did not affect the outcomes of the test. Further, the data of the tests performed with the full data sets are presented.

In addition to the assumptions described above, before running the analysis of covariance (ANCOVA), one more assumption was examined: the assumption of no interaction between the regression lines of the continuous, and categorical predictor variables. The regression lines for each group were studied and it was concluded that the parallel regression line assumption is true. Based on this, the researcher concluded that it was appropriate to conduct the ANCOVA tests for the five continuous variables.

ANCOVA results: syntactic complexity. The *first quantitative research question* posed in the current study was: What is the difference in the syntactic complexity present in the post-treatment paragraphs of the students who participated in the synchronous versus asynchronous CMC pre-writing discussion? The ACMC and the SCMC group results were compared based on their post-treatment T-unit scores, using as a concomitant variable their pre-treatment T-unit scores. The descriptive statistics for the measure are presented accompanied further by the results of the ANCOVA analysis.

The examination of the descriptive statistics of the two groups in terms of their T-unit scores, revealed that in the post-treatment paragraphs the mean length of the T-Units for the ACMC group was only slightly lower (12.77) than the mean length of the T-units for the SCMC group (12.78), with a difference of -0.009. The standard deviation of the two groups was also similar: for the ACMC group it was 2.58, whereas for the SCMC

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group it was 1.53. There was also a similarity between the two groups in terms of their minimum scores: the lowest mean length the T-units produced by ACMC participants was 10.28 words, whereas for SCMC it was 10.58 words. However, the difference in the longest mean length T-units between the two groups was much higher – for the ACMC group it was 20.86 whereas for the SCMC group it was 16.02 words.

The results from the ANCOVA revealed that, when an adjustment was made for pre-treatment scores of T-unit mean length, there was no difference between the groups on T-unit mean length post-treatment scores ($F(28)=0.07$, $p=.88$). Therefore, the Null Hypothesis proposed could not be rejected, and it was concluded that the two groups did not differ in terms of syntactic complexity as measured with T-unit mean length scores. These results are presented in Table 4.9.

ANCOVA results: information present in a single focus. The *second quantitative research question* posed in the current study was: What is the difference in the amount of information present within a single focus of the post-treatment paragraphs of students who participated in synchronous versus asynchronous CMC pre-writing discussion? The ACMC and the SCMC group results were compared based on their post-treatment Idea Units Mean Length (IUML) scores, using as a concomitant variable their pre-treatment IUML scores. Further, the descriptive statistics for the measure are presented below followed by the results of the ANCOVA analysis.

The descriptive statistics of the two groups revealed that in the post-treatment paragraphs the mean length of the idea units for the ACMC group was only slightly higher (8.571) than the mean length of the idea units for the SCMC group (8.057), with a difference of .514. The standard deviation of the two groups was also similar: for the

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ACMC group it was 1.075, while for the SCMC group it was .831. There was also a similarity between the two groups in terms of their minimum IUML scores: the shortest mean length for the idea units produced by ACMC participants was 6.82 words, and for the SCMC participants it was 6.38 words. However, the difference in the longest mean length idea units between the two groups was much higher – for the ACMC group it was 11.975 while for the SCMC group it was 9.635 words.

The results from the ANCOVA revealed that when an adjustment was made for pre-treatment scores of IUML, there was no difference between the groups on IUML post-treatment scores ($F(28)=2.08$, $p=.1606$). Therefore, the Null Hypothesis proposed could not be rejected and it was concluded that the two groups did not differ in terms of amount of information present within a single focus as measured with IUML scores. These results are presented in Table 4.9.

ANCOVA results: quantity of the overall information. The *third quantitative research question* posed in the current study was: What is the difference in the quantity of the overall information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion? The ACMC and the SCMC group results were compared based on their post-treatment Idea Units Number (IUN) scores, using as a concomitant variable their pre-treatment IUN scores. The descriptive statistics for the measure are presented below followed by the results of the ANCOVA analysis.

The descriptive statistics of the two groups revealed that in the post-treatment paragraphs the mean number of the idea units for the ACMC group was only slightly lower (18.35) than the mean length of the idea units for the SCMC group (19.39), with a

difference of -0.3. The standard deviation of the ACMC group was higher (7.35) than the standard deviation of the SCMC group (4.90). There was also a similarity between the two groups in terms of their minimum IUN scores: the lowest number of idea units produced by ACMC participants was 11.5 words, and for the SCMC participants it was 10 words. However, the difference in the highest number of idea units between the two groups was much higher – for the ACMC group it was 36.5 while for the SCMC group it was 29 words.

The results from the ANCOVA revealed that when an adjustment was made for pre-treatment scores of IUN, there was no difference between the groups on IUML post-treatment scores ($F(28)=0.16$, $p=.67$). Therefore, the Null Hypothesis proposed could not be rejected, and it was concluded that the two groups did not differ in terms of quantity of the overall information present as measured with IUN scores. These results are presented in Table 4.9.

ANCOVA results: lexical information. The *fourth quantitative research question* posed in the current study was: What is the difference in the lexical information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion? The ACMC and the SCMC group results were compared based on their post-treatment Lexical Density (LD) scores, using as a concomitant variable their pre-treatment LD scores. The descriptive statistics for the measure are presented further followed by the results of the ANCOVA analysis.

The descriptive statistics of the two groups revealed that in the post-treatment paragraphs the mean of the LD scores for the ACMC group was only slightly lower (5.20) than the mean length of the LD scores for the SCMC group (5.40), with a

difference of - 0.21. The standard deviation of the ACMC group was higher (0.95) than the standard deviation of the SCMC group (0.83). There was also a similarity between the two groups in terms of their minimum LD scores: the lowest lexical density score of the ACMC participants was 4 points, and for the SCMC participants it was 4.2 points. The difference in the highest LD scores between the two groups was also close – for the ACMC group the highest LD score was 7.73 while for the SCMC group it was 6.5.

The results from the ANCOVA revealed that when an adjustment was made for pre-treatment scores of DL, there was no difference between the groups on DL post-treatment scores ($F(28)=0.64$, $p=.54$). Therefore, the Null Hypothesis proposed could not be rejected, and it was concluded that the two groups did not differ in terms of lexical information present as measured with DL scores. These results are presented in Table 4.9.

ANCOVA results: vocabulary complexity. The *fifth quantitative research question* posed in the current study was: What is the difference in the vocabulary complexity present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion? The ACMC and the SCMC group results were compared based on their post-treatment vocabulary complexity (VC) scores, using as a concomitant variable their pre-treatment VC scores. The descriptive statistics for the measure are presented below followed by the results of the ANCOVA analysis.

The descriptive statistics of the two groups revealed that in the post-treatment paragraphs the mean of the VC scores for the ACMC group was only slightly higher (0.46) than the mean length of the VC scores for the SCMC group (0.40), with a difference of

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0.06. The standard deviation of the ACMC group was higher (0.14) than the standard deviation of the SCMC group (0.11). There was also a similarity between the two groups in terms of their minimum VC scores: the lowest lexical density score of the ACMC participants was 0.30 points, and for the SCMC participants it was 0.31 points. The difference in the highest VC scores between the two groups was also close – for the ACMC group the highest VC score was 0.74 while for the SCMC group it was 0.58.

The results from the ANCOVA revealed that when an adjustment was made for pre-treatment scores of DL, there was no difference between the groups on DL post-treatment scores ($F(28)=0.35$, $p=.22$). Therefore, the Null Hypothesis proposed could not be rejected, and it was concluded that the two groups did not differ in terms of vocabulary complexity as measured with VC scores. These results are presented in Table 4.9.

Table 4.9

ANCOVA Results

Measure	Pr>F	DF	Null Hypothesis, α = .05	Variance
T-units Scores (Syntactic Complexity)	0.07	28	Failed to reject (p=.88)	Equal
Mean length of idea units (amount of information present in a single focus)	2.08	28	Failed to reject (p=.16)	Equal
Number of idea units (quantity of overall information present)	0.16	28	Failed to reject (p=.67)	Equal
Lexical density (lexical information per clause)	0.64	28	Failed to reject (p=.54)	Equal
Vocabulary complexity (frequency of the unique words used)	0.35	28	Failed to reject (p=.22)	Equal

Mann-Whitney U Test

Three of the proposed eight measures used ordinal scores. They were analyzed applying three separate non-parametric two-tailed Mann-Whitney U tests. Following are the results of the proposed comparison of the two groups for each measure.

Rhetorical soundness. The ACMC and SCMC groups were compared in terms of their mean dyad scores presenting the evaluation of rhetorical soundness of each post-treatment writing. The Null Hypothesis for the test was that there was no difference

between the means of the two groups. The test failed to reject the Null Hypothesis at 95% confidence level with an obtained $p=.89$.

Presentation and development. The ACMC and SCMC groups were compared in terms of their mean dyad scores presenting the evaluation of presentation and development quality of each post-treatment writing. The Null Hypothesis for the test was that there was no difference between the means of the two groups. The test failed to reject the Null Hypothesis at 95% confidence level with an obtained $p=.22$.

Overall language use. The ACMC and SCMC groups were compared in terms of their mean dyad scores presenting the evaluation of presentation and development quality of each post-treatment writing. The Null Hypothesis for the test was that there was no difference between the means of the two groups. The test failed to reject the Null Hypothesis at 95% confidence level with an obtained $p=.65$.

Pulled Scores Analysis

The application of reduced α, required due to the application of multiple univariate tests, posed serious limitations to the study. When performing the five ANCOVA tests, the possibility of not finding statistically significant effects was high, even though if each of the analyses was performed separately or a fewer ANCOVA tests were conducted, at least one of the effects could be detected (Onwuegbuzie & Levin, 2005). In order to avoid this limitation, the Three-Step Approach for Testing Multiple Univariate Hypotheses proposed by Onwuegbuzie and Levin (2005) was applied. A univariate test of averaged standardized outcomes of the eight variables was used. First, each of the continuous outcome measure scores was standardized (z-scores were calculated) making sure that the z-scores on each measure were similarly oriented. For

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the ordinal scores, the percentile rank was first calculated and then converted to z-scores. Then, the z-scores for each variable were summed and averaged across measures on a dyad level, thus yielding a composite *z*-score for each dyad. Further, an independent samples *t*-test of group mean difference was performed in order to compare the ACMC and SCMC groups in terms of the average composite measure.

The Null Hypothesis tested was that there is no significant difference between the z-score means of the synchronous and the asynchronous groups. The goal of the test was to either confirm or reject the Null Hypothesis; in other words, to infer whether the differences between the groups' means would be "attributable to the "luck of draw" (Cody & Smith, 2006, p. 183) or would differ in the population of English language learners of intermediate level of proficiency. The researcher did not hypothesize a priori if any of the two compared means was greater than the other; thus, a two-tailed *t*-test was performed.

Before conducting the *t*-test, the researcher carefully examined the following assumptions and concluded that they were met: (1) the independence of the groups, (2) normal distribution of the sample means, and (3) equal or similar variance of the two groups. The random assignment of the participants to either ACMC or SCMC group and the consideration of the mean pair scores rather than individual scores assured the compliance with the first assumption. The Shapiro-Wilk W for the ACMC group was 0.002 and for the SCMC group was 0.11 with the SAS default level of significance, α =.05. These results revealed that the ACMC group had a non-normal distribution. After examining the extreme scores, the researcher concluded that there was no error in the score calculation.

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The normality of the data sets was again tested without the extreme observation and it was concluded that its exclusions led to normal distribution (ACMC group W=0.48). The independent two-tailed *t*-tests were performed with and without the extreme observations and in both cases, the results were not statistically significant. Therefore, this allowed the researcher to conclude that there is sufficient evidence that the test outcomes were not affected by the non-normal distribution of the data. Further, the results of the full data set are reported. Finally, the probability *F* value of 0.32 was obtained; this *F* value was greater than the SAS default level of significance, α =.05, which allowed to conclude that equal group variances and probability values must be used when interpreting the test outcomes. The descriptive statistics are presented in Table 4.10.

Table 4.10

Pulled z-scores: Descriptive Statistics

Pulled Z-scores	n	M	SD
ACMC	17	-0.02	0.70
SCMC	13	0.08	0.52

For the pulled *z*-scores scores, a two-tailed *t*-test was conducted to compare the means of the ACMC group ($M = -0.02$, $SD = 0.70$) and SCMC group ($M = 0.08$, $SD = 0.52$) failed to reject the Null Hypothesis at α = .05 level of significance, $t(28) = 0.32$, $p=$

.0.69. The mean difference was -0.93 at 95% confidence interval (-0.57, 0.38). Based on these results, the researcher concluded, that the difference between the pulled z-score means of the ACMC and the SCMC group are not statistically significant. The outcomes of the *t*-test are presented in Table 4.11.

Table 4.11

Independent t-test of the Pulled z-scores: Statistics and Outcomes

Pulled z-scores	DF	Null Hypothesis: $H_0: \mu_1 - \mu_2 = 0$, $\alpha = .05$	Probability *P*, $\alpha = .05$	Variance
ACMC	28	Failed to reject	0.32	Equal
SCMC		(*p*=.69)		

Quantitative Results Summary

The results obtained with analysis of covariance inferential statistics showed that there was no difference between the post-treatment paragraphs of the ACMC and the SCMC groups in terms the eight proposed measures: (1) the syntactic complexity (measured by calculating the mean length of T-units), (2) the amount of information present in a single focus (measured by mean length of idea units), (3) the quantity of overall information present (measured by the number of idea units), (4) lexical information per clause (measured through lexical density analysis), (5) vocabulary complexity (measured by analyzing the frequency of the unique words used), (6) rhetorical soundness, (7) presentation and development of main ideas, and (8) overall language use. In other words, based on these results it could be concluded that the mode

of CMC communication used for the pre-writing discussion did not affect the writing outcomes in the first draft.

A possible reason for these outcomes might be that the development of writing skills that would be detected in the surface (vocabulary, syntactical complexity) and deep textual level (presentation and development, overall language use, rhetorical soundness) is a long process, the changes over a short period of time are not dramatic and could not be detected when the comparison is performed on a small sample. With a larger sample size, differences between the groups might be detectable.

However, the researcher noticed quantitative and qualitative differences in the treatment texts produced by the students during their CMC interactions. The ACMC discussions involved the production of longer sentences but involved fewer postings as compared to the ACMC. The mean number of turns for the ACMC discussions was 5; the ACMC discussions had a mean number of turns 46.46. They were shorter in terms of number of words. The mean length of the ACMC discussions was 272.76 words, whereas the mean length of the SCMC discussion was 410.46. Similar differences between ACMC and SCMC language learners' interactions were reported also by Sotillo (2000). These differences called for further examination of the post-treatment language data in its connection with the language data produced during the treatment. These connections were analyzed, and this analysis is presented in the following section.

Additional Quantitative Findings

Design of the Additional Quantitative Research

In addition to the statistical analyses described in the preceding sections of this chapter, the pre-writing CMC interactions and the post-treatment paragraphs were

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examined in order to find out the degree of intertextual relationship between the CMC interactions and the post-treatment paragraphs. This analysis was based on distinct lexical items that students used both in the pre-writing discussion and the post-treatment paragraph. The *research question* posed was: Do the ACMC and the SCMC modes of the pre-writing discussion influence to a different degree the texts produced after those discussions as measured by matching distinct lexical items?

The texts of the pre-writing discussions were normalized and the lexical items in the pre-writing discussions, and the post-treatment paragraphs were identified using the procedures described earlier in Chapter 3. Further, each identified lexical item was assigned to its lexical family, i.e. it was considered that "all the members of a morphological paradigm are the same lexical item: for example, *differ, differed, different, difference, differing, differently* are all instances of one lexical item" (Holliday, 1989, p. 65). Thus, if inflectional or derivational forms with the same root were detected, they were considered to be the same lexical item. Note that the lists of the most frequently used 1-999 words and 1000-2000 words compiled by Nation (2001), were already sorted by lexical items.

The content words used in the students' CMC pre-writing discussions and paragraphs that were not found in the above mentioned lists were identified by the researcher using the text analysis software designed for the study; these words were compiled into a third list named *Above 2000 Words List*; the words were classified by lexical items. Two independent inter-raters verified the accuracy of the *Above 2000 Words List*. The inter-rater reliability was higher than 99% with both inter-raters. The few instances of discrepancies were discussed and corrected; these instances were based on

human error rather than on disagreement about the list structure. Further, the finalized *Above 2000 Words List* was added to the database and was compared against the *1-999 and 1000-2000 Most Frequently Used Words Lists* (Nation, 2001) aiming to assure that none of the lexical items appeared in more than one list. Thus, the researcher obtained three lexical item lists: (1) *1-999 Most Frequently Used Words Lists*, compiled and published by Nation (2001), (2) *1000-2000 Most Frequently Used Words Lists*, compiled and published by Nation (2001), and (3) *Above 2000 Words List*, compiled by the researcher. These three lists were organized by lexical items and were further used to analyze the intertextual relationship between the texts produced during the treatment (CMC interactions) and students' first post-treatment drafts.

While in the previous analyses, the unique lexical items were considered, in other words each occurrence of a lexical item was identified and counted, in this analysis each lexical item was counted only once. For example, if the words *house, houses* appeared one or more times in either the CMC interaction or the post-treatment paragraph, they were counted as one distinct lexical item (DLI).

In order to compare the degree of the pre-writing discussion influence over the post-treatment paragraphs for the two groups participating in the study, namely the ACMC group and the SCMC group, the following steps were performed. (1) The DLIs were identified for each of the CMC pre-writing interactions; this allowed the researcher to obtain the overall CMC DLI score for each pair of participants. (2) The DLIs were identified for each of the post-treatment paragraphs. (3) The DLIs in each post-treatment paragraph were matched against the corresponding pre-writing CMC discussion and the DLIs used in both the preceding pre-writing CMC discussion and the post-treatment

paragraphs were identified obtaining a matching DLI score for each participant. (4)

Further, the matching DLI scores were used to calculate the ratio of the matching DLIs to

the overall CMC DLI score in the corresponding pre-writing CMC discussion. The

formula used for the ratio calculation was:

$$\frac{\text{Matching DLI score}}{\text{Overall CMC DLI score}} \times 100 = \text{Matching DLI Ratio Score} \quad (1)$$

Thus, for each of the participants a matching DLI ratio score was calculated. (5) The last

step was to calculate the mean matching DLI ratio score for each pair in order to obtain

independent matching DLI ratio scores that could be further used for statistical

comparison.

Figure 4.2

DLI Data Analysis Flow

```
┌─────────────────┐                              ┌─────────────────┐
│ 1. Identify DLI │                              │ 2. Identify DLI │
│ in CMC          │◄──────Match DLIs──────────►  │ in post-        │
│ discussions →   │                              │ treatment       │
│ Overall CMC     │                              │ paragraphs.     │
│ DLF score       │                              └─────────────────┘
└─────────────────┘
         │                    │
         │                    ▼
         │            ┌─────────────────┐
         │            │ 3. Obtain       │
         └────────────│ Matching DLI    │
         │            │ Scores          │
         │            └─────────────────┘
  Calculate ratio
         │
         ▼
┌─────────────────┐          ┌─────────────────┐
│ 4. Obtain       │          │ 5. Obtain       │
│ Matching DLI    │Calculate │ Matching DLI    │
│ Ratio Score     │────────► │ Ratio Score     │
│                 │          │ mean for each   │
│                 │          │ pair            │
└─────────────────┘          └─────────────────┘
                                      │
                                      ▼
                                  ◇ Conduct
                                    statistical
                                    analysis ◇
```
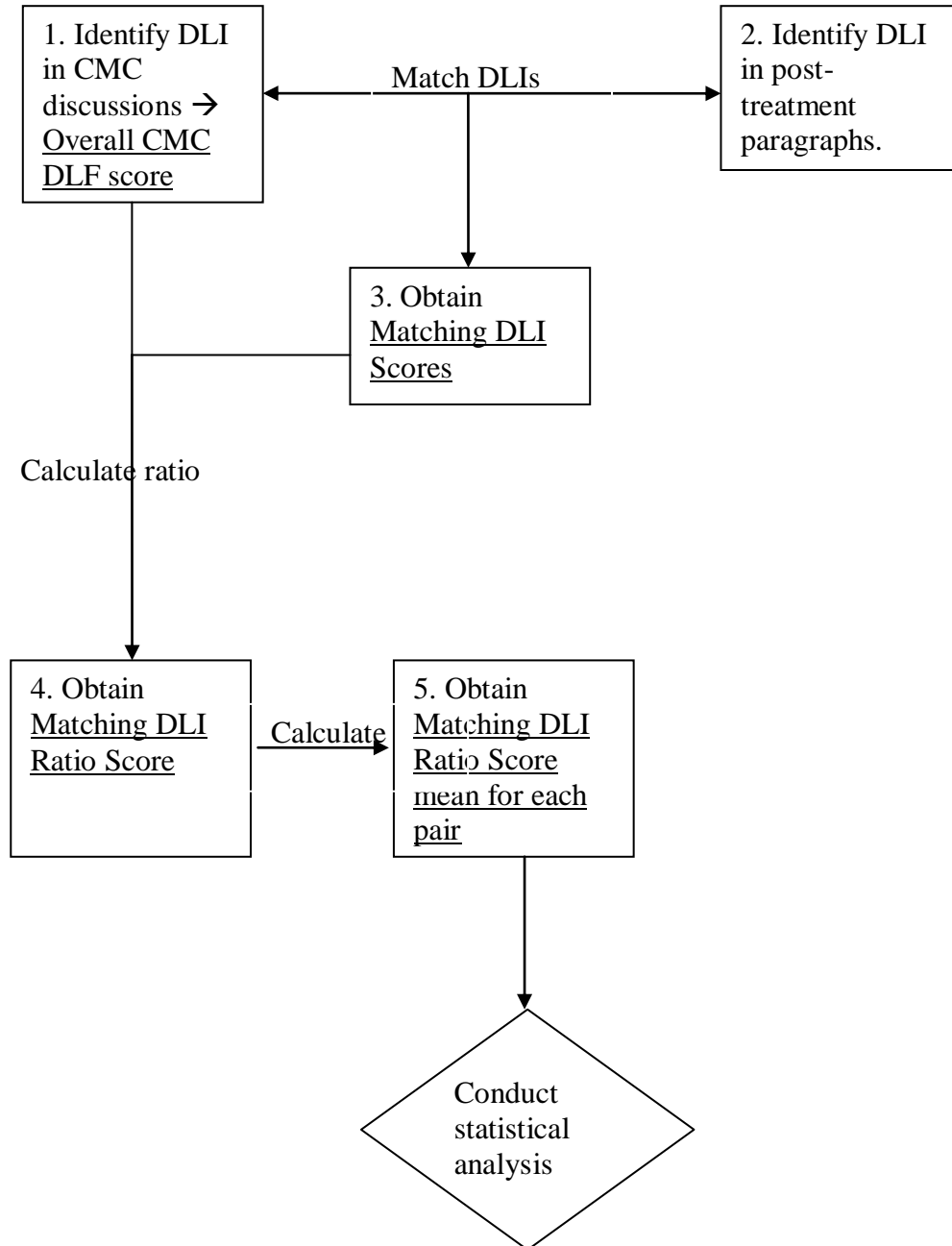
These steps were performed using the text analysis software designed for the

study. In order to assure that the software scripts were running correctly, the researcher

and the programmer independently calculated the scores for 10% of the data and compared them to the software outcomes. The results matched 100% which allowed the researcher to conclude that the scripts were running appropriately and all generated results were correct.

The matching DLI ratio scores were analyzed using SAS® (SAS Institute, Inc., 2004). The ACMC and SCMC groups' means of the matching DLI ratio scores were compared through a t-test. The Null Hypothesis tested was that there is no significant difference between the matching DLI ratio means of the SCMC and the ACMC groups.

The goal of the test was to either confirm or reject the Null Hypothesis; in other words, to infer whether the differences between the groups' means would be "attributable to the "luck of draw" (Cody & Smith, 2006, p. 183) or would differ in the population of English language learners of intermediate level of proficiency. The alternative to the Null Hypothesis inferred that there was a difference between the two groups' means. The researcher did not hypothesize a priori if any of the two compared means was greater than the other; thus, a two-tailed t-test was performed.

Results of the Additional Quantitative Research

Before conducting the independent t-test, the researcher carefully examined the following assumptions and concluded that they were met: (1) the independence of the groups, (2) normal distribution of the sample means, and (3) equal or similar variance of the two groups. The random assignment of the participants to either ACMC or SCMC group and the consideration of the mean pair scores rather than individual scores assured the compliance with the first assumption. The comparison of the Shapiro-Wilk W=0.6772 for the ACMC group and Shapiro-Wilk W=0.7125 for the SCMC groups with the SAS

default level of significance, alpha=.05, allowed to conclude with 95% confidence that there was a sufficient evidence that the means were normally distributed. Finally, the probability *F* value of 0.1128 was obtained; this *F* value was greater than the SAS default level of significance, alpha=.05, which allowed to conclude that equal group variances and probability values must be used when interpreting the test outcomes.

For the distinct lexical item (DLI) scores, a two-tailed *t*-test was conducted to compare the means of the ACMC group (*M* = 40.42, *SD* = 13.66) and SCMC group (*M* = 26.30, *SD* = 8.63). The Null Hypothesis was rejected at α = .05 level of significance, *t*(28) = 3.25, *p*= .003. The Mean difference was 14.11 at 95% confidence interval (5.23, 22.99). The Cohen's *d* (1.20) signified a large effect size.

Based on these results, the researcher concluded, that probability of obtaining higher matching DLI ratio score means for the ACMC group than for the SCMC group from a representative population under the same conditions was highly unlikely. Thus, the intertextual connections between the pre-writing interactions and the first drafts for the ACMC group participants were significantly stronger than for their SCMC counterparts. The descriptive statistics are presented in Table 4.12 and the outcomes of the *t*-test are presented in Table 4.13.

Table 4.12

Independent t-test of the Distinct Lexical Items (DLIs): Descriptive Statistics

	N	DLI M	DLI SD	DLI Skewness	DLI Kurtosis
ACMC	17	40.42	13.66	0.02	-0.93
SCMC	13	26.30	8.63	0.42	-0.42

Table 4.13

Independent t-test of the Distinct Lexical Items (DLI): Statistics and Outcomes

DLI	DF	Null Hypothesis: $H_0:\mu_1-\mu_2 = 0$, $\alpha = .05$	Probability *P*, $\alpha = .05$	Variance
ACMC SCMC	28	Rejected (p=.0030)	0.1128	Equal

Summary of the Additional Quantitative Findings

The results of the DLI scores *t*-test suggested that, as measured by DLIs, the

ACMC and the SCMC modes of the pre-writing discussion influenced to a different

degree the texts produced after these discussions. In the post-treatment writings, the

students who participated in the ACMC pre-writing discussions used to a greater extent

the DLIs from their pre-writing discussions as compared to the SCMC group. Thus, it

was concluded that the intertextual relation on a lexical level between the pre-writing

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discussion performed via ACMC mode (treatment) and the writings that followed these discussions (post-treatment) was stronger as compared to the same criteria for the SCMC group.

This comparison shed some light on the intertextual relationships between these texts. It allowed inferring that the degree to which the CMC pre-writing discussion influenced the first draft was affected by the mode of the pre-writing discussion; more specifically, the ACMC pre-writing discussion seemed to influence to a higher degree the first drafts. This conclusion is based on the assumption that the same DLI might have conveyed similar or identical ideas given that these were "content words" (Holiday, 1989, p. 63) used within the same context of the assigned topic: "The People of the United States".

<p align="center">Chapter Summary</p>

In this chapter, the data analysis and results of the quantitative and qualitative stages of the study were presented. Further, based on the qualitative stage findings related to the nature of language produced in the two different modes of CMC in which the treatment pre-writing task was performed, additional data analysis was proposed, and the outcomes of this analysis were presented. The discussion of the findings reported in this chapter as well as the implications and recommendations related to these findings are presented in Chapter VI: Summary, Discussions, Recommendations, and Implications. The following chapter presents eight instrumental case studies of the eight students who benefitted the most and the least from the treatment task; these case studies aim to disclose the specifics of the investigated first stages of the writing process.

CHAPTER V: INSTRUMENTAL CASE STUDIES

Introduction

In this chapter, eight single instrumental case studies with unit of analysis intermediate ESL learners are presented. I approached the presentation and the analysis of my observations within the context of the writing as a process approach focusing on the first two stages of the five-stage process: the pre-writing and drafting stage (Grabe & Kaplan, 1996). The social context in which these two stages took place, namely students' backgrounds, the environment, the opportunities for dyadic interaction during the pre-writing stage, and the influence of the outcomes of these interactions were taken into account when presenting each case study. Thus, the dyadic brainstorming, the influence of computer-mediated environment and the intertextual connections of the first drafts were investigated. My analysis was informed by socio-cultural approach to interaction as well; the model of dyadic interaction proposed by Storch (2002) was used to interpret the dynamics of students' interaction during the pre-writing task completion.

The cases were chosen using Extreme/Deviant sampling technique (Kemper et al., 2003). This purposive sampling allowed the identification of the most outstanding cases among the participants in the quantitative stage of the study (n=60) based on writing gains as a result of the treatment. Thus, the students who demonstrated the highest and the lowest gains in their writings after participating in a CMC pre-writing task were the actors of these case studies.

As described in Chapter III: Methods, the gains were measured by comparing the pre-treatment and post-treatment scores for the eight criteria proposed for students' text analysis, namely: (1) the syntactic complexity (measured by calculating the mean length of t-units), (2) the amount of information present in a single focus (measured by mean length of idea units), (3) the quantity of overall information present (measured by the number of idea units), (4) lexical information per clause (measured through lexical density analysis), (5) vocabulary complexity (measured by analyzing the frequency of the unique words used), (6) rhetorical soundness, (7) presentation and development of main ideas, and (8) overall language use (the last three criteria were assessed using a multiple trait rubric). In order to obtain comparable standard scores, for each of the above criteria z-scores were calculated (Glass & Hopkins, 1995); this allowed the identification of the extent and the direction to which the scores of each participant for the eight proposed criteria deviated from the group distribution mean. Further, the pulled average pre- and post-treatment z-scores for each of the 60 participants in the study were obtained; based on the difference between the post-treatment and pre-treatment pulled average scores the z-score average gain was calculated and the case study actors were identified. Table 5.1 presents these participants and their pulled average z-scores.

Table 5.1

Instrumental Case Study Participants: Average Gains

Achievement Level and CMC Mode	Case Study Actor	Z-Score Average Gain
Low ACMC	Shin	-1.218328443
	Azad	-0.744473159
High ACMC	Felipa	1.783441878
	Isabella	1.31275934
Average Gains: ACMC Group (n=34)		0.01355427
Low SCMC	Ajwad	-0.656827894
	Kamil	-0.636001647
High SCMC	Kang	0.64492224
	Sun	0.460250215
Average Gains: SCMC Group (n=26)		-0.051795905
Average Gains CMC (n=60)		-0.014764139

As is shown in Table 5.1, the eight students selected for the instrumental case studies are grouped into four pairs: (1) two students participated in an ACMC pre-writing interaction and demonstrated the lowest pulled gain, (2) two students participated in an ACMC pre-writing interaction and demonstrated the highest pulled gain, (3) two students participated in an SCMC pre-writing interaction and demonstrated the lowest pulled gain, (4) two students participated in an SCMC pre-writing interaction and demonstrated the highest pulled gain. Appendix 5.1 presents the complete list of z-scores for the case study participants.

The case study analysis and comparison aims to provide an understanding of how ESL students of intermediate level proficiency who had high and low gains in their post-treatment writings participated in one pre-writing CMC task and applied the results of this pre-writing interaction in their paragraphs. The pre-writing discussion task, presented in detail in Chapter III: Methods, provided the participants with six images united by the theme of "The People of the Unite States." The students were asked to discuss the pictures and prepare to write a paragraph on the topic. The specific research questions addressed in the case studies were as follows: *Research Question 1:* How do peers participate in asynchronous and synchronous pre-writing CMC interactions? *Research Question 2: (a)* How do they use the specific ideas and language generated during these interactions in their writings? *(b)* What are the differences and similarities in the implementation of these ideas?

Thus, the pre-writing CMC discussion, the text of the draft created based on this discussion, and the intertextual connections between the pre-writing discussion and the following draft were the focus of each instrumental case study analysis. The intertextual analysis for each of the cases was performed on three separate levels. These levels included: (1) lexical, (2) organizational, and (3) textual level, with idea units being used as a unit of analysis.

The intertextuality on lexical level was identified based on the matching DLI scores obtained during the quantitative stage of the study. The working definition of DLI was: the same lexical items which appeared one or more times in either the CMC interaction or the post-treatment paragraph were considered to present one distinct lexical item (DLI). These sores represented the lexical items that were used both in the pre-

writing discussion and the following it draft. The consideration of the DLI scores allowed me to make suggestions about the strength of the pre-writing discussion and the post-treatment paragraph connections on a lexical level.

The organizational level analysis was conducted relating the pre-writing discussion organizational suggestions such as topic sentence, supporting ideas, and conclusions, to the draft organization. In addition, I accounted for the sequencing of ideas in the discussion and whether the same or similar sequence was evident in the draft. This analysis allowed me to suggest possible connections between the pre-writing discussion and the post-treatment paragraphs on an organizational level.

Finally, the textual (idea unit) level analysis of intertextuality was performed through segmenting the pre-writing discussion texts and the post-treatment writing using language strings "packed" in a single focus. Each idea unit from the pre-writing discussions was compared against the idea units from the draft texts. The intertextual connections between the discussion and draft idea units were interpreted and new idea units composed in the draft were identified.

The following working definition of idea units was used in the process of identification and analysis of the idea units in the participants' writings and CMC postings: an idea unit is a separate clause. "That is, it contains one verb phrase along with whatever noun phrases, prepositional phrases, adverbs, and so on are appropriate" (Chafe, 1985, p. 106); however, if a complement or restrictive relative clause is present or indirect question or indirect quotation is used, these belong to the idea unit presented by the main clause. Dependent clauses, appositives (including examples provided by the writer, i.e. "*for example: New York, Houston, Los Angeles*"...), and participial clauses

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(past and gerund) were considered to be separate idea units. When analyzing CMC discourse production, single phrases indicating agreement, disagreement, understanding, etc. were considered as separate idea units – for example: "Thank you!" "Yes," an emoticon, etc.

The intertextual connections were presented and interpreted in the context of students' background, patterns of interaction, and mode of CMC communication. The following notation was used in the presentation of idea unit analysis of intertextuality: *IUx* (with "*x*" representing the consecutive number of an idea unit of each actor's post-treatment writing, *IUx** (actor's idea unit from the CMC pre-writing discussion), and *IUx*** (partner's idea unit from the CMC pre-writing discussion).

In the analysis, I approached the idea units in each CMC pre-writing interaction based on their relation to the topic under discussion. If an idea unit was perceived to directly contribute content information to the assigned topic "The People of the United States," it was considered to be a content idea unit. For example, the sentence "*As you know most of Americans came from other countries.*" was divided into two idea units: a non-content idea unit "*as you know*" and a content idea unit "*Americans came from other countries.*" This distinction of idea units allowed me to follow more precisely the participants' contributions to the discussion and to interpret different types of intertextual connections.

During the idea unit analysis and comparison, I found that the intertextual relations of the draft idea units and the idea units from the pre-writing were of different level of intensity. Some draft idea units were either identical or very similar to idea units from the discussion, while others were new. Thus, four levels which presented the

strength of intertextual connections emerged from the data: *high, medium, low, non-existent*. *The high level* of intertextual connections signified idea units in the post-treatment students' texts that were repeated verbatim or closely related to specific idea units from the pre-writing discussion. They included the following categories: (1) partner's idea units borrowed verbatim from the discussion, (2) own idea units borrowed verbatim from the discussion own, (3) partner's idea units from the discussion rephrased, and (4) own idea units from the discussion rephrased. *Medium level* included idea units with a relation to the pre-writing discussion being less direct. The following categories were identified and considered in the analysis: (5) new paragraph idea units based on partner's idea unit(s), (6) new paragraph idea units based on own idea unit(s), (7) new paragraph idea units based on a combination of partner's and own idea unit(s). The categories for *the low level* of intertextual connections included new idea units more specifically: (8) new paragraph idea units which presented a development or interpretation of partner's topic, (9) new paragraph idea units which presented a development of own topic, (10) new paragraph idea units which presented a development of own and partner's topic. Finally, the non-existent intertextuality was identified in (11) new paragraph idea units which presented a development of a new topic not traceable in the discussion.

To assure the consistency of the analysis, two complete case studies (25%) were reviewed by a trained peer interrater. In addition, this interrater was also well informed about the specifics of the intertextual analysis and had recent experience in using idea unit as a unit of intertextual analysis. No significant discrepancies were identified by the interrater in the reviewed case studies.

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In this chapter, each instrumental case is presented separately with a subsequent case comparisons and discussion. Following Yin's (2003) view, I believe that describing, analyzing, and comparing a collection of cases rather than one or two separate cases would reveal better the processes under investigation. The findings of the study are not conclusive, due to the limited number of participants; however, taking into account the limited research related to the pre-writing and first-paragraph stages of the writing process in the field of ESL, I believe that analyzing one pre-writing interaction produced by each of the extreme-case actors and the first drafts that followed these interactions would shed some light on the processes occurring in the pre-writing stage and their connections with the first draft writing. In my view, the findings will inform further research in this area as well as instructional practices related to the use of CMC in the ESL writing class.

<div align="center">The Case Studies</div>

<div align="center">*ACMC Actors, Low Gains Case Studies*</div>

Case Study One: Azad

  Azad's background. I met Azad in the beginning of the Fall 2006 semester. He just arrived into the United States along with a group of Arabic students from Saudi Arabia and Qatar. Due to the large number of students enrolled in the fall semester, it was difficult for me to have detailed observations of his class interactions; thus, my presentation of Azad is mainly based on the analysis of his computer interactions with other students and the answers he provided during our ACMC interview.

  Azad was a 19-year-old male student from Qatar. He graduated from high school where he mainly focused on studying science-related subjects. In the ACMC interview,

Azad was concise and straight to the point with his answers. He would avoid providing details or extending his answers after my follow up clarification questions. In addition, he avoided answering some of the interview questions, mainly those related to his opinion on writing. When I approached him during one of the breaks and asked him to post answers to these questions, he simply said: "*It is hard, teacher.*" The full text of the interview is provided in Appendix 9.

When sharing with me his past educational experiences during our ACMC interview, Azad answered that it was mainly teacher-centered, which he did not like. He stated: "I like tak and in school you don't talk. Listen to the teacher." (Line 11, Appendix 9) [Here and thereafter, the spelling and punctuation of students' postings are kept unchanged]. Based on my computer class observations and on Azad's interview postings, it appeared that he was quite comfortable with computers. While his computer use for educational purposes before coming to the U.S. was limited to a computer class only and he did not report using computer or CMC for problem-solving tasks and research, he stated that he frequently used computers for chat and email. As with the majority of the students at the ELI, this most probably was one of the main means of communication with friends and family back home, although Azad did not specify this in his answer.

The treatment interaction. The treatment task, presented in Appendix 4, was completed by Azad in an asynchronous environment using ICA2 conferencing function. The pre-writing interaction task required a discussion of six related pictures united by the theme of "The People of the United States." Following is the complete log of their ACMC pre-writing interaction.

Log 5.1

ACMC Pre-writing Discussion: Azad and Partner

1 **Message 1 Azad- FROM:** Azad (02/17/06 6:26 PM GMT -06:00

2 I think that the first picture shows that the population of the U.S. are in the most

3 U.S. areas, in the north, south east and west...

4 How about you [partner's name]?...

5 **Message 1 Peer - FROM:** Peer (02/20/06 1:57 PM GMT -06:00)

6 Ok. I think first picture shows the population of United States are too many so they

7 don't need any more immigrants.

8 **Message 2 Azad - FROM:** Azad (02/20/06 1:58 PM GMT -06:00)

9 I think the second picture shows that some of the big buldings in one of the U.S.

10 cities.

11 **Message 3 Azad FROM:** Azad (02/20/06 2:02 PM GMT -06:00)

12 the third picture show the differents between Americans, because some of them live

13 in small houses and some of them in big houses.

14 **Message 2 Peer FROM:** Peer (02/20/06 2:03 PM GMT -06:00)

15 Yes, second picture means a city that have many buildings.

16 **Message 3 Peer FROM:** Peer (02/20/06 2:07 PM GMT -06:00)

17 Third one means residence that americans live.

18 **Message 4 Azad FROM:** Azad (02/20/06 2:08 PM GMT -06:00)

19 I think the fourth picture shows that the U.S. immigrants have been coming from

20 different countries like Spain, England, Korea ...etc.

21 **Message 5 Azad FROM:** Azad (02/20/06 2:10 PM GMT -06:00

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22   the fiveth picture is like the second picture.

23   **Message 4 Peer FROM:** Peer (02/20/06 2:11 PM GMT -06:00)

24   I think the fourth mean a race diversity. As you know most of americans came from

25   other countries. Therefore there is a culture pluralisim in U.S.

26   **Message 5 Peer FROM:** Peer (02/20/06 2:13 PM GMT -06:00

27   The last picture means location where America is placed and big city.

28   **Message 6 Azad FROM:** Azad (02/20/06 2:14 PM GMT -06:00)

29   Fainally, the sixth picture mean th size of the U.S. and hoe are the states are far

30   from each other.

Azad and his partner posted more times than other students who participated in

ACMC pre-writing interactions: the average number of turns for the ACMC group was 5,

while for this dyad, it was 11. There is a possibility that this higher number of messages

was a result of the discussion strategy they applied. Based on the time tags, it appears that

all of the messages except for the first one were made within 16 min between 1:58 PL

GMT and 2:14 PM GMT; thus, their interaction was synchronous although performed

using a CMC tool designed for asynchronous communication. This affected the dynamics

of the interaction: it shared features of both synchronous and asynchronous discussion: as

with synchronous postings, Azad's and partner's messages were shorter than the average

ACMC message in this study and they consisted of one or two sentences, while the in all

of the other ACMC interactions considered in the study each message would contain

numerous sentences. Further the number of the messages posted by Azad and his partner

was higher. However, their messages also had features of asynchronous communication –

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use of complete sentences, writing longer sentences, and posting two or three sentences within one message.

During the pre-writing discussion, Azad and his partner demonstrated dominant patterns of interaction. Despite the numerous postings (six made by Azad and five by his partner), they did not show the ability to create a discussion space online. Azad, in his message 1 (lines 1-4) in the pre-writing discussion indicated an attempt to set the discussion in a collaborative mode: he initiated the discussion stating his opinion about the first picture from the discussion task and invited his partner to express his opinion. However, this was the only posting that showed an attempt to create a shared discussion space. Further, Azad proceeded with the description of the second and the third picture (Messages 2 and 3, lines 8-12) leaving without comments his partner's posting which addressed different aspects of the first picture. Their interaction consisted of postings of their own interpretations of the pictures which differed between the two participants; neither Azad nor his partner showed signs of considering, building on or extending the partner's interpretations. Their contribution to the discussion was similar in terms of quality and quantity: both of them addressed only part of the task (their interpretation of the pictures) and failed to discuss the future paragraph organization. Moreover, they posted a similar total number of idea units: Azad – 16 and partner – 15. The number of content idea units was also comparable although Azad's partner posted more content idea units: Azad – 8, partner – 11.

In his interview, Azad shared satisfaction with the way he completed the task and with the opportunity to share opinions about the task with his partner. He stated: "*I did a good job. Easy…. I like that he tell and I tell then. We do it together*." Despite his

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satisfaction with his and his partner's performance during the pre-writing discussion and the appreciation for the opportunity to share ideas, when asked if he used the discussion ideas when composing his paragraph, Azad stated that he used new ideas when writing his paragraph ("*I write new ideas*").

Azad also perceived the task to be helpful for his writing skills development because it supported the improvement of his spelling. Despite the overall positive attitude and satisfaction with the task completion, Azad expressed concerns related to time limitation which prevented him from contributing more to the task: "*It was not very helpful, bacause we did not have a time to write many things*." (Appendix 5.2) However, I accept this comment with some reservations, as it is evident from the time tags that most of the discussion took place for only 16 minutes. My impression was that before their CMC session, each one of them prepared something to post, and they logged into ICA2 to post this prewritten material rather than to engage in discussion.

The paragraph: intertextual connections. Based on the gain scores of his pre- and post-treatment paragraphs, it could be concluded that Azad did not benefit greatly from the ACMC pre-writing discussion. The gain scores he obtained for his post-treatment writing were negative: -.656827894 as measured by the difference of the pulled pre- and post-treatment z-scores. On six of the eight measures, he performed worse in his post-treatment writing demonstrating a negative gain (refer to Appendix 5.1 for complete list of case study participants' z-scores). The two criteria on which he improved his writing were the amount of information present in a single focus (measured by mean length of idea units) and lexical information per clause (measured through lexical density analysis). Further, I address the intertextual connections of Azad's post-treatment paragraph written

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following the ACMC pre-writing discussion in order to make inferces about the strategies

he applied when using the pre-writing discussion during the composition of his first draft.

During their discussion, the partners did not address paragraph organization,

although this was explicitly requested in the task description. This again suggests that

they did not invest enough time and effort into task discussion. The organization of

Azad's post-treatment paragraph showed that he reorganized the ideas shared during the

chat. Azad's paragraph, along with the ACMC interaction connections, is presented

further in ACMC Paragraph Comparison Matrix 5.1: Azad.

ACMC Matrix 5.1

Paragraph Comparison: Azad

Partner's Postings (by Idea Unit)	Azad's Postings (by Idea Unit)	Azad's Paragraph (by Idea Unit)
	Message 1: FROM: Azad (02/17/06 6:26 PM GMT -06:00 I think IU1* that the first picture shows IU2* that the population of the U.S. are in the most U.S. areas, in the north, south east and west...IU3* How about you Partner?... IU4*	The number of people of the U.S is very big IU1-IU3** [Rephrased partner's – synonyms] and there are many kinds or types of people. IU2-IU10** [Rephrased partner's – synonyms & syntax changes] First, there are many immigrants who have been coming from different countries IU3-IU13* [Exactly the same own – shortened] and they are all of
Message 1- FROM: Partner (02/20/06 1:57 PM GMT -06:00 Ok. I think IU1** first picture shows IU2** the population of United States are too many IU3** so they don't need any more imigrants.IU4**		

ACMC Matrix 5.1 (Continued)

Paragraph Comparison: Azad

Partner's Postings (by Idea Unit)	Azad's Postings (by Idea Unit)	Azad's Paragraph (by Idea Unit)
	Message 2: FROM: Azad (02/20/06 1:58 PM GMT -06:00) I think IU5* the second picture shows IU6* that some of the big buldings in one of the U.S. cities. IU7* Message 3: FROM: Abdulaziz Alemadi (02/20/06 2:02 PM GMT -06:00) the third picture show the differents between Americans, IU8* because some of them live in small houses IU9* and some of them [live] in big houses. IU10*	U.S. area. IU4-IU3* [Own, rephrased – syntax changes for cohesion transformation and shortened – drops PP] Second, in many U.S. cities there are some huge buildings IU5-IU7*[Own, rephrased. Synonyms, content change] which made it by Americans people. IU6 [New, develops new

ACMC Matrix 5.1 (Continued)

Paragraph Comparison: Azad

Partner's Postings (by Idea Unit)	Azad's Postings (by Idea Unit)	Azad's Paragraph (by Idea Unit)
Message 2 - FROM: Partner (02/20/06 2:03 PM GMT -06:00) Yes, second picture means a city IU5** that have many buildings. IU6** Message 3 - FROM: Partner (02/20/06 2:07 PM GMT -06:00) Third one means residence IU7** that americans live. IU8**		topic extending own topic from IU7*] Third, the people in U.S. are different, IU7-IU8* [Own, rephrased – syntax change of predicate center cohesion.] because some of them are rich IU8 [New, develops new topic extending own topic from IU10*] and they live in big houses, IU9-IU10* [Own, rephrased – synonym change and added verb] and some of them are normal IU10 [New, develops new topic extending own topic from IU9*] and live in regular
	Message 4: FROM: Azad (02/20/06 2:08 PM GMT -06:00) I think IU11 the fourth picture shows IU12* that the U.S. immigrants have been coming from different countries like Spain, England, Korea ...etc. IU13*	

ACMC Matrix 5.1 (Continued)

Paragraph Comparison: Azad

Partner's Postings (by Idea Unit)	Azad's Postings (by Idea Unit)	Azad's Paragraph (by Idea Unit)
Message 4 - FROM: Partner (02/20/06 2:11 PM GMT -06:00) I think IU9** the fourth mean a race diversity. IU10** As you know IU11** most of americans came from other countries. IU12** Therefore there is a culture pluralisim in U.S. IU13**	Message 5: FROM: Azad (02/20/06 2:10 PM GMT -06:00 the fiveth picture is like the second picture. IU14*	houses. IU11-IU9* [Own, rephrased - content change] finally,
Message 5 - FROM: Partner (02/20/06 2:13 PM GMT -06:00 The last picture means location IU14** where America is placed and big city. IU15**	Message 6: FROM: Azad (02/20/06 2:14 PM GMT -06:00) Fainally, the sixth picture mean th size of the U.S. IU15* and hoe are the states are far from each other.[10] IU16*	

ACMC Matrix 5.1 (Continued)

Paragraph Comparison: Azad

Coding scheme:

1. <u>IU underlined – content idea unit</u>

2. <mark>Yellow Highlight Color – new idea unit</mark>

3. <mark>Grey Highlight Color – own idea unit</mark>

4. <mark>Blue Highlight Color – partner's idea unit</mark>

The analysis of the lexical intertextual connections of Azad's writing and the pre-writing discussion showed a rather low level of shared lexical items. The ratio of the distinct lexical items matching in the ACMC discussion and the paragraph to the overall CMC discussion distinct lexical items was 26.09, while the same ratio for the ACMC group was 41.77 and 34.30 for the ACMC and SCMC groups combined. This suggests a weak relation between the two texts – that of the pre-writing discussion and the following draft. In order to reveal the dynamics of the intertextual connections of the two texts, these connections were further analyzed on an idea unit level.

The content idea units were identified, the organizational phrases such as "*I think*" were considered to be non-content idea units. Azad did not use any of the non-content idea units from his pre-writing discussion in his paragraph. The total number of idea units Azad composed in his paragraph was 11. Only two of these 11 idea units (IU1 and IU2), 18.18% of the total number of idea units, showed connection with partner's idea units (IU3** and IU10**) as stated in the discussion. They were rephrased by using synonymous expressions. In idea unit 1 the simple noun phrase "*the population*" was replaced by a complex noun phrase "*number of people*". In idea unit 2 "*race diversity*" was replaced with "*many types or kinds of people*"; in addition, he also applied a syntax change of the predicate of the idea unit for cohesion purposes: "*the fourth* [picture] *mean*" was changed to "*there are* [many types or kinds of people]". Azad used only one unchanged idea unit of his own from the pre-writing discussion (IU 3 – IU13*), which constituted 9.1% of the total number of idea units in his post-treatment writing; however, he shortened it omitting the list of countries he provided in the discussion.

The highest number of idea units in Azad's writing, five (45.45%), was based on rephrased idea units from his own postings. He rephrased five idea units using various rephrasing strategies (IU4 – IU3*, IU5 – IU7*, IU7 – IU8*, IU9 – IU10*, and IU 11 – IU9*). The following specific rephrasing strategies were used: (1) syntax changes that affected the subject and were made to achieve paragraph cohesion [for example, in idea unit4, he replaced the subject noun phrase "*the people of the US*" (IU3*) with the pronoun "*they*" (IU4), similar change was performed in idea unit9 where Azad replaced the subject "*some of them*" (IU10*) with "*they*"]; (2) idea unit clipping [for example he shortened idea unit4 by simplifying a phrase and omitting a list of clarifying examples: "*in the most of US areas, in the north, south, east and west…*" (IU3*) was shortened to "*all of US areas.*"; (3) use of synonyms [for example "*big*" (IU7*) was replaced with "*huge*" (IU5)]; (4) content change ["*one of the US cities*" (IU7*) was replaced by with "*many US cities*" (IU5), and "*small houses*" was replaced by "*regular houses*"]. Thus, his rephrasing techniques were performed within the boundaries of the borrowed idea units. He composed three new idea units (IU6, IU8, and IU10) as an extension of topics proposed in his own idea units, which constituted 27.27% of his writing.

Therefore, 72.72% of the idea units in Azad's writing showed strong connections with his own ideas stated in the pre-writing discussion, they were either idea units that were rephrased (45.45%) or new idea units influenced by the his own ACMC postings (27.27%). Only 18.18% of the idea units that Azad composed in his post-treatment paragraph were somewhat influenced by Azad's partner's postings. Table 5.2 presents the idea units from Azad's paragraph sorted by type.

Table 5.2

Paragraph idea units: Azad

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	1	0	2	5	0	0	0	0	3	0	0	11
Paragraph %	9.1%	0%	18.18%	45.45%	0%	0%	0%	0%	27.27%	0%	0%	100%

Criteria Coding Scheme:

(1) Partner's verbatim

(2) Own verbatim

(3) Partner's rephrased

(4) Own rephrased

(5) New based on partner's idea unit

(6) New based on own idea unit

(7) New based on combination of partner's and own idea units.

(8) New development or interpretation of partner's topic

(9) New development of own topic

(10)　　New development of own and partner's topic

(11)　　New – no traceable connections with pre-writing discussion

Intertextual connections: conclusions. Based on this analysis, I would interpret Azad's paragraph to have loose intertextual links with the pre-writing discussion. Azad's paragraph was connected more strongly with his own ideas developed during the pre-writing discussion; in addition to the rephrased own ideas, the three new ideas included in the writing were all a continuation of own ideas from the discussion. Partner's ideas use was marginal, and did not influence to a great extent the paragraph composition. Thus, the dominant pattern, demonstrated in the pre-writing discussion, was traceable in Azad's paragraph as well: he mainly worked with his own ideas, rephrasing and extending them. He almost completely ignored his partner's ideas; thus, the pre-writing discussion and the use of its outcomes were approached as if they were outcomes of an individual brainstorming rather than peer collaboration results. He used four different strategies for rephrasing: (1) syntax changes that affect the subject or the verb and were made to achieve paragraph cohesion, (2) idea unit clipping, (3) use of synonyms, (4) content change. When examining the paragraph idea units in which the intertextual connections with the discussion idea units were identifiable, I found that Azad did not extend any of the ideas units from his pre-writing discussion into more than one idea unit in his writing.

The comparison of the z-scores obtained from the analysis of his pre-treatment and post-treatment paragraphs showed overall negative gains; in other words, in his post-treatment paragraph, Azad performance was weaker. However, Azad improved on some of the criteria considered for textual analysis: it seems that, that the opportunity to work with the pre-writing discussion outcomes rephrasing already composed idea units helped Azad to improve his ability to handle more information in a single focus and to present more lexical information in a single clause.

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How do peers participate in asynchronous CMC interactions?

During the asynchronous interaction, Azad and his partner failed to create a common discussion space. They demonstrated dominant patterns of dyadic interaction: both of them posted their own views on the pictures and the topic and did not engage in discussion of each other's opinions. They posted their messages within a short time – 16 minutes attempting to use ICA2 conferencing function designed for ACMC for a synchronous exchange. This resulted in a higher number of postings, although they were shorter, shorter as compared with other ACMC interactions; however, these postings preserved the general specifics of the ACMC postings: low number of non-content idea units and longer and mainly complete sentences.

How do they use the specific ideas and language generated during these interactions in their writings?

The intertextual connections at a lexical level between Azad's paragraph and his pre-writing discussion were lower than the average. I could not detect any intertextuality on organizational level: the partners did not discuss explicitly this aspect of the task and the sequencing of ideas shared during the discussion differed from the idea sequence in the post-treatment writing. However, Azad's paragraph showed strong intertextual connections with the pre-writing discussion when the comparison was performed based on idea units. All of the paragraph idea units showed some intertextual connections on idea unit level: Azad did not generate any new idea units during his first draft composition, although, in the interview he stated that he composed new ideas when asked if he used some of the partner's ideas. Most of the idea units composed showed high-

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level intertextuality: he borrowed verbatim and rephrased idea units. However, the consideration of his partner's ideas was rather limited – most of the idea units he rephrased were his own. His rephrasing techniques were performed within the boundaries of the idea units. He also developed some idea units based on his own topics addressed in the discussion; these idea units had low-level intertextuality.

Case Study Two: Shin

   Shin's Background

   Shin was a 38-year-old female student from Korea. In her country, she worked as a nurse. Shin first enrolled at the ELI in Spring semester 2005 and, based on her placement test results, she was enrolled in Level III. I met Shin during the Spring semester of 2005. During this semester, as the computer assisted language consultant at the ELI, I was responsible for the administration of a computer diagnostic skills test. The goal of the test was to identify the students whose low computer skills may impede their performance at the ELI. Shin was one of the students who needed additional help with her computer skills. The outcomes of the diagnostic skills test showed that, although being comfortable using email, Shin needed to develop skills related to formatting, saving files to a particular location, and typing; in addition, her Internet search skills were weak. During the workshops she attended, I remember her to be rather shy and reluctant when completing the assigned computer tasks.

   Shin took a break during the summer of 2005, and, based on the outcomes of the Fall 2005 placement test, she was assigned again to Level III. In her interview, Shin shared that she graduated from a nursing school in which the classes were organized in a similar manner with classes in the US universities. Further she added: "*We have two things – practice and theory*." (The full text of the ACMC interview is presented in Appendix 10). Her perception of writing was that being a good writer is important for academic success; in the interview she stated: "*Very important for study*." When sharing her perception of writing and development of writing skills, Shin perceived vocabulary to be the key for the development of good writing skills; the difficulty with writing that she

personally encountered was sentence word order. She stated that something that would be enjoyable for her when writing in English would be writing about her personal experiences, such as her trip (to Korea). In her interview, Shin shared that she felt more comfortable when using computers after studying for two semesters at the ELI.

When comparing the two applications she used during the training period – L.E.C.S. and ICA2 – Shin stated that she preferred ICA2. She explained this preference in terms of her weaker typing skills which did not bother her as much when posting on ICA2. In addition, I would say that the interface of ICA2 and the way it functions are similar to email, a means of CMC communication with which Shin felt more comfortable. Further in her interview, Shin shared her perception of the importance of developing good computer skills to be related to her profession.

I had the chance to observe multiple sessions of Shin's Level III section. Based on my observation notes, during the face-to-face classes, Shin was routinely quiet. She would never volunteer an answer during class discussion but would almost always have one when the teacher asked her directly. When working in a small group setting, she would prefer to stay silent carefully listening to her peers' discussion. She demonstrated limited desire to collaborate with partners during the computer laboratory small group activities as well. I observed two computer laboratory triad sessions in which Shin participated. During these sessions, she would sit further from the computer allowing her peers to interact with each other and have access to the computer. She would be the quiet observer who would provide her opinion only if asked directly. Thus, her pattern of class participation and small group interaction might be identified as being very close to what Storch (2002) identified as passive/novice pattern, depending on the type of partners'

interaction: Shin almost never asked questions or sought assistance; her contribution to discussions was very limited and was not made unless it was requested by peers or the teacher.

The treatment interaction. During the CMC treatment session, based on the random participant assignment, Shin was assigned to an ACMC discussion dyad. Her peer was an experienced computer user. In the pre-writing discussion, Shin and her partner demonstrated a dominant interaction pattern. Following is the full transcript of their interaction.

Log 5.2

ACMC Pre-writing Discussion: Shin and Partner

 1   **Message- 1 FROM:** Peer (10/14/05 9:22 AM GMT -06:00)

 2   HI, IM THERE, IM ALREADY LOGGED IN

 3   **Message 1- FROM:** Shin (10/14/05 9:24 AM GMT -06:00)

 4   Yes, I'M too.

 5   **Message 2 – FROM:** Shin (10/16/05 4:14 PM GMT -06:00)

 6   I think that this is a my topic sentence; In the U.S, most people are living in the city

 7   and people came from different countries and have different appearance.

 8   Supporting ideas; 1.Most people live in city because they can get a lot of

 9   advantage.

10   2.people have different appearance-European, Asian,Africian.

11   3.people experience many kinds of culture.

12   **Message 2 - FROM:** Peer (10/16/05 4:56 PM GMT -06:00)

13   ok, here is what i think. for the topic sentence i think is better this:

14   topic: now the people in the united states live as a friendly and united country with

15   all the ethnic groups without segregation.

16   for main idea: we should talk about the way of life of us people.

17   and supporting ideas: we can talk about all the cultures in US and the most

18   important cities, and also we can talk about the life in the suburbs and farms

19   **Message 3 - FROM:** Peer (10/16/05 7:22 PM GMT -06:00)

20   according to the images we can talk about all the people in the whole country, we

21   cant talk about too about the lifestyle in suburbs and farms and also in big cities,

22   and also teh msot important caracteristics of this big cities, we cant talk about the

23   "melting pot" the compilation of all the cultures

24   **Message 3 – FROM:** Shin   (10/17/05 10:02 AM GMT -06:00)

25   Hi! Could you tell me more about "melting pot"?

26   **Message 4 – FROM:** Shin   (10/19/05 8:12 PM GMT -06:00)

27   You have a lot of idea. Thank you for your suggestion. Iwill write in my paragraph

28   such as population in theU.S,immigration,multiculture,urbanism

During their ACMC pre-writing discussion, Shin posted four messages and her

partner three, which was slightly higher than the average number of turns for the ACMC

group (7). Their contribution to the discussion in terms of idea units number was similar:

Shin composed 15 and her partner – 18 idea units. They started the asynchronous session

with two messages (lines 1-4) whose goal was to check whether both of them could

access the discussion space. The next two messages (lines 5-22) were made two days

later. Shin addressed the task in her message; she provided her topic sentence and

supporting ideas. She did not invite her peer to post his contribution to the task nor did

she pose a question to him. There was a hint of disagreement that her partner expressed in his second message: "*for the topic sentence i think is better this*" (line 12), the word "*better*" used by the partner could be considered as a sign of disagreement with the topic sentence which Shin posted in her previous message. Further in the interaction, Shin did not respond to this part of the message. She asked a question (lines 23-24) in regard to the "*melting pot*" mentioned by her partner to which she did not receive an answer. In her final message (line 25-27), she posted a very brief outline of her future paragraph which did not show "direct" connection with her partner's ideas shared in the discussion. Thus, both Shin and her partner demonstrated a dominant pattern of dyadic interaction: they both contributed to the task completion but were unable to engage with each other's contributions.

When sharing her experiences about the treatment task, Shin stated that she felt uncomfortable because of her computer skills. She also stated that in a face-to-face discussion, she could remain silent, if she wished but in a computer discussion, she had to post. During the discussion, she used an electronic dictionary. Her weak typing skills affected negatively the discussion, another reason for her to prefer the face-to-face discussion to a CMC one. She felt that sharing information with her partner helped her to prepare for her paragraph writing, and she stated that she included some of her partner's ideas.

The paragraph: intertextual connections. Shin's post-treatment paragraph written after the pre-writing ACMC session showed negative gain as measured by the difference of the pulled pre- and post-treatment z-scores: -1.218328443. In fact, she had the lowest gain among all participants in the study. The only criterion in which her post-treatment

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writing improved was presentation and development (refer to Appendix 11 for the complete list of students' z-scores).

Further, I address the intertextual connections that were identified between the first paragraph draft composed by Shin and the pre-writing discussion in which she participated. In Shin's paragraph, the intertextual connections with the pre-writing discussion on a lexical level were medium to weak. The ratio of matching distinct lexical items of her paragraph and the pre-writing discussion was 34.85, which was lower than the average ACMC group ratio (41.77) and very close to the average ratio of the ACMC and the SCMC group combined (34.30). In the pre-writing discussion, Shin and her partner discussed the paragraph content and organization. The intertextual connections between this discussion and her paragraph were traceable but rather weak. Shin followed the general pattern of organization she stated in her final posting. There were four parts she mentioned in her posting: "*population, immigration, multiculture, urbanism.*" All four were traceable in her paragraph. However, they were reordered, and immigration appeared both in the beginning merged with population description (new ideas) and in the third part of the paragraph, where it was a part of the multiculturalism presentation. The full text of the pre-writing discussion and Shin's paragraph along with analysis comments are presented in Comparison Matrix 5.2.

ACMC Matrix 5.2

Paragraph Comparison: Shin

Partner's Postings(by Idea Unit)	Shin's Postings (by Idea Unit)	Shin's Paragraph Ideas (by Idea Unit)
Message 1 - HI, IM THERE, IU1** IM ALREADY LOGGED IN IU2**		The U.S includes various race [own rephrased IU6* - (1) synonymic phrase, (2) syntax – for cohesion] and people from different countries. IU1-IU5* [own rephrased: syntax for cohesion, two IU*combined]
	Message 1- Yes, I'M too. IU1*	
		Population of the U.S is over 281 million. IU2 [new topic] The U.S the third most populous country in the world. IU3 [new topic] Develop of industry are caused urbanization. IU4-IU15* [own extended part of IU15*] Therefore, country sides exist only some small towns and houses.
	Message 3 - I think IU2* this is my topic sentence IU3*; In the U.S, most people are living in the city IU4* and people came from different countries IU5*and have different appearance IU6* Most people live in city IU7* because they can	

ACMC Matrix 5.2 (Continued)

Paragraph Comparison: Shin

Partner's Postings(by Idea Unit)	Shin's Postings (by Idea Unit)	Shin's Paragraph Ideas (by Idea Unit)
	get a lot of advantage.IU8* - people have different appearance-European, Asian,African. IU9* people experience many kinds of culture IU10*	IU5-IU15** [New - based on partner's idea unit – IU15**] Also, when people live in the city, IU6-IU4* [own rephrased – verb tense, cohesion marker added] they can get a lot of advantage. IU7-IU5* [own exactly the same, shortened conjunction dropped] Another thing is IU8 [New, added for cohesion] the U.S people have more convenient from industry. IU9 [New] They can use many kinds of transportation IU10 [New] and rising standard of living. IU11 [New] According to U.S people, the U.S history is very important in the
Message 2 - ok, here is what i think. IU3** for the topic sentence i think IU4** is better this: IU5** topic: IU6** now the people in the united		

ACMC Matrix 5.2 (Continued)

Paragraph Comparison: Shin

Partner's Postings(by Idea Unit)	Shin's Postings (by Idea Unit)	Shin's Paragraph Ideas (by Idea Unit)
states live as a friendly and united country with all the ethnic groups without segregation. IU7** for main idea: IU8** we should talk about the way of life of us people. IU9** and supporting ideas: IU10** we can talk about all the cultures in US and the most important cities, IU11** and also we can talk about the life in the suburbs and farms IU13**		word. IU12 [New] Many people want to come to U.S. IU13-IU5* [Rephrased own – content changes] It is immigration. IU14 [New, based on own IU5*] People from various countries what have different culture. IU15-IU10* [Rephrased - own, extended with more detail] So, They respected other culture IU16-IU7** [New based on partner's] and make a new culture. IU17-IU18** [New – based on partner's] The U.S as a 'melting pot' IU18-

ACMC Matrix 5.2 (Continued)

Paragraph Comparison: Shin

Partner's Postings(by Idea Unit)	Shin's Postings (by Idea Unit)	Shin's Paragraph Ideas (by Idea Unit)
Message 3 - according to the images we can talk about all the people in the whole country, IU14** we cant talk about too about the lifestyle in suburbs and farms and also in big cities, IU15** and also teh msot important caracteristics of this big cities, IU17** we cant talk about the "melting pot" the compilation of all the cultures IU18**		IU18** [New based on partner's] where various racial and ethnic groups have been combined into one culture. IU19-IU18** [New based on partner's] In conclusion, the U.S is made more powerful by various people and culture. IU20 [New]

ACMC Matrix 5.2 (Continued)

Paragraph Comparison: Shin

Partner's Postings(by Idea Unit)	Shin's Postings (by Idea Unit)	Shin's Paragraph Ideas (by Idea Unit)
	Message 3 – Hi! IU11* Could you tell me more about "melting pot"? IU12* Message 4 – You have a lot of idea. IU13* Thank you for suggestion. IU14* Iwill write in my paragraph such as population in the U.S, immigration, multiculture, urbanism <u>IU15*</u>	

ACMC Matrix 5.2 (Continued)

Paragraph Comparison: Shin

Coding scheme:

1. <u>IU underlined – content idea unit</u>

2. <mark>Yellow Highlight Color – new idea unit</mark>

3. <mark>Grey Highlight Color – own idea unit</mark>

4. <mark>Blue Highlight Color – partner's idea unit</mark>

As it is evident from the comparison matrix, the intertextual connections of Shin's paragraph with the pre-writing discussion were stronger in her part of the discussion. Out of the total 20 idea units she composed in her paragraph, one idea unit (IU7), 5% of the total idea units of her post-treatment writing, was borrowed verbatim from her partenr's message (IU5*), and five idea units (25%) were rephrased own discussion idea units (IU1, IU4, IU6, IU13, and IU15). Thus, high-level intertextual connections existed between Shin's paragraph and her pre-writing discussion with her partner; however, she was mainly using her own idea units at this level of intertextuality.

Shin used different strategies when rephrasing her idea units: (1) use of synonyms was applied in one idea unit [the phrase "*different appearance*" (IU6*) was replaced by "*various race*" (IU1)]; (2) syntax changes were applied in three idea units, twice in idea unit 1, and in IDEA UNIT6 [for example she incorporated idea unit 5* *"and people came from different countries"* into idea unit1 *"and* [includes] *people from different countries*"]; (3) extending a part of an idea unit from the discussion was applied in two of the idea units from the paragraph – idea unit 4, idea unit15 [for example, Shin extended idea unit10* *"people experience many kind of culture"* in idea unit15 *"people from various countries what have different culture*"]; (4) combining idea units from the discussion into one larger idea unit was applied [*"The U.S includes various race and people from different countries."* (IU1) is a combination of idea unit6* and idea unit5*]; (5) content change [*"and people come from different countries"* (IU5*) was changed to *"many people want to come to U.S."* (IU13)]. Thus, when rephrasing idea units from the discussion, Shin mainly applied changes within the borrowed idea unit boundaries. Only one paragraph idea unit presented an attempt to move beyond the idea unit boundaries.

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In addition to the rephrasing of her own idea units used in the pre-writing discussion, Shin composed 13 new idea units (65%). Five of them she based on three of her partner's discussion idea units, further developing them: IU5, IU16, IU17, IU18, and IU19. Shin developed two topics suggested by her partner: life-style in suburbs and farms (IU15**) and "*melting pot*" as a "*compilation of cultures*" (IU18**). For example, in idea unit 16, she rephrased entirely and shortened (idea unit clipping) her partner's idea (IU7**) preserving only its key topic: respect and culture. One paragraph idea unit (IU14) was based on Shin's discussion idea unit: she restated the topic refining her vocabulary choice. Thus, on a medium level of intertextuality, Shin considered some of her partner's ideas.

Shin composed eight new idea units which did not have a direct connection with any of the idea units from the discussion. For example, idea unit12 developed a new subordinate topic related to culture; idea unit20 was the concluding sentence of the paragraph and actually summarized several ideas shared during the discussion. One of the new idea units (IU 8) was added for establishing paragraph cohesion. In addition, some of these new idea units (IU2 and IU3) provided new facts to support the topic of population.

Intertextual connections: conclusions. On a lexical level, the relationship between Shin's post-treatment paragraph and the pre-writing discussion she had with her partner suggested lower than ACMC group average intertextual connection. On organization level, there were some weak but detectable connections with the pre-writing discussion. The connection of her paragraph with the pre-writing discussion on an idea unit level showed that she established mainly high- and medium-level intertextual connections and considered almost all of her own idea units. She extensively rephrased all of her own idea

units that she included into her paragraph, except for one. The strategies she used for

rephrasing of her own ideas units were: (1) syntax changes, (2) use of synonymic phrases,

(3) combining of idea units, and (4) extending idea units. She used some of her partner's

topics in her paragraph and based new idea units on them. Her consideration of partner's

contribution was evident at a medium level of intertextual connection: Shin composed

new idea units which were based on topics developed by her partner. Thus, Shin

attempted to use her partner's topics at a medium level of intertextuality, but on the high

level her consideration of partner's ideas was much weaker. While the majority of her

paragraph idea units (12 – 60%) showed intertextual connections with the pre-writing

discussion, in her paragraph, Shin composed eight idea units (40%) that were new and

did not show any traceable connections with the discussion. Table 5.3 presents Shin's

idea units sorted by intertextuality type.

Table 5.3

Paragraph Idea Units: Shin

Intertextuality		High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	1	0	0	5	5	1	0	0	0	0	8	20
Paragraph %	5%	0%	0%	25%	25%	5%	0%	0%	0%	0%	40%	100%

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

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Answering the Research Questions

How do peers participate in asynchronous CMC interactions?

During the asynchronous interaction, Shin and her partner failed to create a common discussion space. They both contributed to the task but did not comment or discuss each other's contributions.

How do they use the specific ideas and language generated during these interactions in their writings?

The intertextual connections at a lexical level between Shin's paragraph and her pre-writing discussion were lower than the average. There were some detectable connections on organizational level, however, they were weak. Shin's paragraph showed stronger intertextual connections with the pre-writing discussion when the comparison was performed based on idea units.

Many of the paragraph idea units showed some intertextual connections on idea unit level. Shin was able to establish high-level intertextual connections with idea units mainly generated by her during the pre-writing discussion, while the medium-level intertextual connections were mainly identified with partner's ideas. Her rephrasing techniques were performed within the boundaries of the idea units. Only in one idea unit did she combine two idea units from the discussion, showing an attempt to move beyond the idea unit boundaries.

<center>*ACMC Actors, Low Gains: Comparison*</center>

Participants' Backgrounds

When comparing the two cases, I found that the two students had different backgrounds: they were coming from different countries and cultures, they were at

different stages of their lives both academically and professionally, and they had different computer exposure and experiences. However, there were a few similarities in their pre-writing interactions and the texts they composed after this interaction. These similarities are highlighted and discussed below.

Although their attitude towards the task overall was positive, in the interviews, Azad and Shin expressed some concerns about the ACMC treatment task. Azad perceived it to be time-consuming, while for Shin the task was difficult because of her typing skills; thus, she indirectly suggested that the task was time-consuming as well. One additional aspect of the ACMC discussion that made Shin uncomfortable: unlike in class discussion, she felt that she could not remain silent during the ACMC discussion. However, both participants stated that sharing information with their partners was helpful. In addition, Azad perceived the task to be helpful to improve spelling.

The Pre-writing Interaction

There were some similarities and differences in their interactions, paragraph writing, and intertextual connections between the pre-writing interaction text and the text of their first paragraph draft. Although Azad and Shin valued the opportunity to share information with their partner, neither was able to engage in a collaborative discussion and demonstrate dominant patterns of interaction. In their pre-writing interactions they contributed similarly in terms of quantity as measured by idea units: Azad's postings contained 10 idea units and Shin's, 15. The contribution of their partner in terms of quantity of information as measured by idea units was also similar: Azad's partner posted 15 idea units and Shin's, 18.

Post-treatment Paragraph Gains and Intertextual Connections

Azad and Shin demonstrated low writing gains in their paragraph drafts composed after ACMC discussion. They demonstrated positive gains on limited aspects of their post-treatment paragraphs. Azad showed ability to use higher amount of information in a single focus (as measured by mean length of idea units) and higher lexical information per clause (as measured through lexical density analysis). The only aspect of writing Shin improved was presentation and development of the topic (as measured using multiple trait rubric).

The intertextual connection of their paragraphs and ACMC discussions on a lexical level was lower than the ACMC group average. This suggests that their use of vocabulary generated during the discussion was limited. Further, on an organizational level, the intertextual connections were weak (for Shin) to non-existent (for Azad).

Both actors failed to recognize and consider their partner's contribution at a high-level intertextuality. Azad used, to a limited extent, his partner's idea units in his paragraph. Most of Azad's paragraph idea units were composed based on his own idea units from the pre-writing interaction. Shin used her partner's topics as the basis for new idea units, thus, demonstrating a medium level intertextuality. She also composed newly developed ideas not discussed in the pre-writing stage. Thus, the intertextual connections of both Azad's and Shin's paragraphs were stronger with their own contribution to the discussion.

The two participants also used similar paraphrasing strategies when incorporating idea units from the ACMC discussion into their writing: (1) syntax changes, (2) idea unit clipping, (3) synonymous changes, (4) content changes. In addition to these paraphrasing

techniques, Shin combined idea units from the discussion into larger idea units in the text. Shin also attempted to develop themes which were only briefly mentioned by her partner but were not developed in the discussion.

Answering the Research Questions

How do peers participate in asynchronous CMC interactions?

These case studies suggest that learners of different ages and computer literacy levels may become engaged in a dominant type of interaction during an ACMC discussion due to their own or their partner's failure to remain involved with each other's contribution.

How do they use the specific ideas and language generated during these interactions in their writings?

The two low-gain participants showed strong high-level intertextual connections, but they mainly rephrased their own ideas. The common rephrasing strategies they used when including discussion idea units into their paragraphs were: (1) use of synonyms, (2) syntactic changes, (3) idea unit clipping, and (4) content changes. Shin also considered her partner's topics and built new idea units based on them, thus establishing intertextuality on a medium level. (Refer to Appendix 5.5: Ordered Comparison Matrix for a table presentation of the case comparison.)

<div align="center">ACMC Actors, High Gains Case Studies</div>

Case Study Three: Felipa

Felipa's background. Felipa is one of the continuing students who participated in the study. She had started as a Level I student in the Summer of 2005, two semesters before she participated in the study. Although she was inconsistent in answering my

questions from the asynchronous interview, I decided to use her as one of the actors in the instrumental case study. This decision was based on the fact that Felipa demonstrated the highest gain among all students who participated in the study as identified by comparing differences between the pulled z-score of the post-treatment and pre-treatment writings. The information that I was unable to obtain from the interview was partially restored by accessing Felipa's student file as well as considering the SCMC interviews in which she participated during the SCMC and ACMC training sessions as a source of information.

Felipa is a 23-year-old student from Colombia. During the past year, she resided in the United States with her husband. The spring semester of 2006 was her third semester at the ELI, and she was making good and steady progress in the development of her language skills. I had the chance to observe Felipa during face-to-face and computer laboratory sessions. Based on these observations, I could conclude that she was a diligent learner who enjoyed group work and could work productively in a small face-to-face group environment.

In addition, as is evident from her answer to the writing teacher's welcome message posted on ICA2, Felipa had specific goals for the writing class as well as a clear understanding of her weak sides with regard with writing. (The full text of this response is provided in Appendix 5.7.) In her response to her writing teacher, she wrote: "*That i want to know everything about writing. sometimes i am comfuse with the vocabulary and the order of the words. i want to know about how i can write in past and present progresive. and also i what to know about punctuation.*" Based on her answers to the interview questions, I could conclude that Felipa was an experienced computer

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user. She reported using computers routinely for communicating with her friends and for shopping. She expressed a very positive attitude towards computers and CMC in particular. This is what she shared in the interview: "*I like use the chat yes I love chat with my family after the class because it is only my free time for use CMC and this is very important for me because in this way you never are feeling alone*." (Refer to Appendix 5.6 for the full text of the interview.) In addition, based on the SCMC peer interview students performed as a training task before the treatment, Felipa's opinion was that CMC could support her language learning,. During this activity, when asked by her peer if she thought that chat and email in English could help her to learn the language better, her answer was: "*yes i think it's very good because we can to thing more about what we are going to write*."

In the beginning of her studies at the ELI, she befriended two other students (one male and one female) from her Level I class. They formed a very tight group which stayed together during all three of the semesters. During the semester in which the study took place, Felipa and her two friends were enrolled in the same section of Level III. They were always together during breaks, and, whenever they had the choice, they worked in the same group during class assignments. Felipa and one of her friends were randomly assigned to the same dyad for the treatment. During the observed class sessions in which Felipa participated, I noticed that she was very open and did not hesitate to ask questions or request assistance from peers and the teacher.

The treatment interaction. The contribution to the pre-writing discussion of Felipa and her partner was very similar. Each one posted one long message in which the entire task was addressed. Their contribution was similar in terms of quantity as well. The total

number of idea units in her posting was 35 and partner's posting, 39. The number of content idea units in her pre-writing interaction posting was 26. The organization of Felipa's posting was almost identical to that of her partner's: she addressed each picture from the task under a heading with the picture number and even her partner's incorrect use of "controller idea" instead of "controlling idea" was transferred to her message. This suggested that she read carefully her partner's contribution. The only difference was that Felipa, who posted approximately five hours after her partner, acknowledged her partner's posting by stating that she agreed with him (line 39). However, this agreement was not supported by her interpretation of the pictures which was different from that of her partner's. The full log of their interaction is presented below.

Log 5.3:

ACMC Pre-writing Discussion: Felipa and Partner

1   **Message 1 – FROM:** Partner (02/19/06 4:29 AM GMT -06:00)

2   The people of the U.S.

3   Describing the pictures.

4   Picture 1:

5   Territory information describing the density of population distributed in all states of

6   America. Besides the rapport density/territory seems to be different if we analyze

7   the state of Alaska and the island of Hawaii. While the people of the biggest part of

8   America are uniform distributed accordingly in Hawaii Island, in Alaska the

9   majority density of the people is concentrated in the south.

10   Picture 2:

11   If we compare with European cities the structure of American cities has been as a

12   result the opposite process to think about how to live individual life. While the

13   business center of the American cities has a tendency to look similar every where,

14   outside down town the rural parts of land keep the peculiar characteristics of the

15   American real dream. People live in an own houses with garden far from the ring of

16   business-work.

17   Picture 3:

18   Most of American cities are crossed by river or sea therefore the bridge is a good

19   idea to unify all part of the city and gives it sometimes an interesting engineering or

20   architectonic characteristic.

21   Picture 4:

22   This is the real fascinating skyline of the American cities. In a relative short space

23   is concentrate in height most of the workers of the U.S. The skyscraper is not only

24   a high building but became a symbol of the power of American business.

25   Picture 5:

26   The Unites states a nation of immigrants. As consequence of that from the

27   beginning the U.S. has been seen a mix of culture and the ethnic diversity is

28   probably the most important thing.

29   Picture 6:

30   Two principal cost in exam: the Atlantic cost and the Pacific cost in relation with a

31   principal most populated cities in the U.S. New York City is a symbol of the

32   Atlantic Ocean. Moreover Los Angeles and San Diego are two important cities for

33   different reason situated on the Pacific Ocean.

34   Topic and controller idea:

35 Even though the United States has composed by large variety of enormous ethnic

36 diversity it conserve own identity.

37 Body:

38 Supporting C.I. by example of what is recognizable nation identity of America.

39 On the other hand what does make the real America today?

40 Example based from the description of the 6 pictures. In each one pictur has

41 described America.

42 **Message 1 – FROM:** Felipa (02/19/06 9:14 PM GMT -06:00)

43 Hi Partner I am agree with you. I thing the topic is how live the people in the U.S.

44 Description.

45 Picture # 1

46 *****In the first picture I can see how the US although a very large country, one can see

47 how people live throughout. The country equally; no matter if it to the South North

48 east or West and even in Alaska or the Hawaiian Islands.

49 Picture # 2

50 *In the second picture I can see one of the US largest cities, like San Francisco

51 Miami, Los Angeles Atlanta Dallas which clearly shows large skyscrapers as well

52 as very dense population.

53 Picture 3rd

54 * We can se a small town which are plentiful around the US; with lots of small

55 buildings and houses where people live in a more peaceful way with less stress and

56 perhaps happier**[8]**.

57 Picture 4th

58   * In the 4th picture we can see what seems to be a mixture of the different from all

59   over the world marching towards a common goal.

60   Picture 5th

61   * On the 5th picture we can see what appears to be the golden gate bridge in NY

62   City with the large skyscrapers in the background.

63   You can also see some of the large boats which navigate the Hudson River as

64   everybody know NY is one of the larger metropolis in the world for business and

65   finances.

66   Picture 6th

67   * In the last picture we can see the main land which stretches from Los Angeles to

68   NY and from Chicago to Houston.

69   We can also see that the US has the Pacific Ocean and the West and the Atlantic

70   Ocean in the East.

71   We can also observe the proximity of Cuba and Mexico to the south.

72   Topic and controller idea.

73   U.S is a large mass of land in which people from all over the world live and work

74   together.

Based on these observations, I could conclude that the two partners were unable to engage with each other's contributions and demonstrated dominant patterns of dyadic interaction. It seems that Felipa's partner disengaged early from the task before any discussion took place: there was no evidence from the discussion posts that he read Felipa's contribution. On her side, Felipa did not conclude her post with a question or a request for partner's opinion also showing sign of task disengagement. Thus, both of

them disengaged from the task once they completed their first posts without showing any intention for further discussion.

In the interview, when asked about the pre-writing task, Felipa stated that she had a positive opinion about the task; however, she admitted that she felt confused in the beginning: "I felt very good but i needed time for understood each question" [referring to the pictures from the task]. Thus, I would suggest that the participation in the pre-writing message exchange helped her to understand the task better. She also shared that, when completing her part of the discussion, she used her husband's help and a dictionary. She did not mention her partner's posting to contribute to her understanding of the task.

The paragraph: intertextual connections. In her post-treatment paragraph draft, Felipa showed gains on six of the eight proposed text analysis parameters as measured by the difference of the pre- and post-treatment z-scores: (1) the syntactic complexity (measured by calculating the mean length of t-units), (2) the amount of information present in a single focus (measured by mean length of idea units), (3) lexical information per clause (measured through lexical density analysis), (4) rhetorical soundness, (5) presentation and development of main ideas, (6) and overall language use (the last three criteria were assessed using a multiple trait rubric). She demonstrated a negative gain on the following two parameters: (1) the quantity of overall information present (measured by the number of idea units) and (2) vocabulary complexity (measured by analyzing the frequency of the unique words used). Felipa had the highest gain of the students in the ACMC treatment group as well as of all 60 participants in the study with a difference of the pulled pre- and post-treatment z-scores being 1.783441878.

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On a lexical level, the intertextual connections of Felipa's paragraph with the pre-writing discussion were weak – the ratio of matching distinct lexical items of her paragraph and the pre-writing discussion was 27.27, which was lower than the average ACMC group ratio (41.77) as well as the average ratio of the ACMC and the SCMC group combined (34.30). However, I decided to look at the ratio of matching distinct lexical items of her paragraph and the pre-writing discussion considering only her writing. This decision was based on the intertextual comparison on idea unit level which revealed that Felipa did not use any of the idea units of her partner; thus, she considered only her posting. When the matching distinct lexical items were calculated for Felipa's pre-writing posting and her first paragraph, it appeared that the intertextual connections at a lexical level were close to the medium of the ACMC group and higher than the medium of the whole groups as a whole – Felipa's score was 41.46. Thus, I interpreted the intertextuality at the lexical level as medium to strong rather than as a weak.

In the pre-writing postings, Felipa and her partner each proposed their own paragraph organization. Felipa did not follow hers, only, the topic sentence of her paragraph closely corresponded with the topic she proposed for the discussion. She used many of the content idea units she posted during the pre-writing discussion but reordered them extending some of the topics with new support. However, there was an intertextual connection between her message organization and her paragraph which was not related to the sequence of ideas: she incorporated in her paragraph either rephrased or unchanged cohesion idea units used to organize her ACMC pre-writing. Presented below is a detailed discussion of the intertextual connections on the idea unit level between the pre-writing discussion in which Felipa participated and her post-treatment paragraph.

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Felipa disregarded entirely her partner's contribution to the pre-writing discussion. Based on the comparison of her partner's idea units and the idea units used by Felipa in her post-treatment writing, it appears that she did not use any of his ideas. She concentrated mainly on rephrasing, developing, and supporting further her own ideas. Following is a comparison matrix of Felipa's and her partner's pre-writing discussion and Felipa's post-treatment paragraph with analysis comments.

ACMC Matrix 5.3

Paragraph Comparison: Felipa

Partner Postings (by Idea Unit)	Felipa Postings (by Idea Unit)	Felipa Paragraph (by Idea Unit)
Message 1: From Partner - The people of the U.S.IU1** Describing the pictures.IU2** Picture 1:IU3** Territory information describing the density of population distributed in all states of America. IU4** Besides the rapport density/territory seems to be different IU5** if we analyze the state of Alaska and the island of Hawaii. IU6** While the people of the biggest part of America are uniform distributed	**Message 1: From Felipa -** Hi Partner I am agree with you. IU1* I thing the topic is how live the people in the U.S. IU2* Description.IU3* Picture # 1 IU4* In the first picture I can see how the US although a very large country, IU5* one can see how people live throughout. IU6* The country equally; no matter if it to the South North east or West and even in	I am going to talk about life and people in the US. IU1-IU2* [Rephrased - own syntactic changes, successful grammar correction] In some parts we can see very big and larges countries for example Miami, Los Angeles Dallas with skyscrapers with a dense population, IU2 [Rephrased - own - combines IU9* and IU10*]also we can see IU3-IU29*[Rephrased own - use of non-content IU for organization] how the people don't have any problems IU4

ACMC Matrix 5.3 (Continued)

Paragraph Comparison: Felipa

Partner Postings (by Idea Unit)	Felipa Postings (by Idea Unit)	Felipa Paragraph (by Idea Unit)
accordingly in Hawaii Island, IU7** in Alaska the majority density of the people is concentrated in the south.IU8** Picture 2: IU9** If we compare with European cities IU9** the structure of American cities has been as a result the opposite process IU10** to think about how to live individual life. IU11** While the business center of the American cities has a tendency to look similar every where, IU12** outside down town the rural parts of land keep the	Alaska or the Hawaiian Islands. IU7* Picture # 2 IU8* In the second picture I can see one of the US largest cities, like San Francisco Miami, Los Angeles Atlanta Dallas IU9* which clearly shows large skyscrapers as well as very dense population. IU10* Picture 3rd IU11* We can se a small town IU12* which are plentiful around the US; IU13*	[New, based on own extends IU14*-15*] from to be mixture with people of ethnic-diversity from all over the world IU5-IU18* [Verbatim - own, only clipping for cohesion] marching for the same goal to be free IU 6 – IU19* [Rephrased – own, synonyms, extension] and have pursuit of happiness IU7 [New – development of own IU15*] and to be equal in the life with their families IU8 [New] and work together. IU9-IU35* [Verbatim own] How we can find dense population and big

ACMC Matrix 5.3 (Continued)

Paragraph Comparison: Felipa

Partner Postings (by Idea Unit)	Felipa Postings (by Idea Unit)	Felipa Paragraph (by Idea Unit)
peculiar characteristics of the American real dream. IU13** People live in an own houses with garden far from the ring of business-work.IU14**	with lots of small buildings and houses where people live in a more peaceful way with less stress IU14* and perhaps happier. IU15*	office buildings in those cities. IU10-IU10* [Rephrased – own, synonyms, syntax] We can find also IU11-IU29* [Rephrased – own, synonyms, text organization IU, cohesion] how the
Picture 3: IU15** Most of American cities are crossed by river or sea IU16** therefore the bridge is a good idea to unify all part of the city IU17** and gives it sometimes an interesting engineering or architectonic characteristic.IU18**	Picture 4th IU16* In the 4th picture we can see IU17* what seems to be a mixture of the different from all over the world IU18* marching towards a common goal. IU19* Picture 5th IU20*	people enjoy in small towns and the peaceful way with less stress IU12-IU12* & IU14* [Rephrased - own, synonyms, combines 2 IU] and take care of their family and their gardens IU13 [New – support own IU 12-IU14*] and perhaps happier IU14- IU15* [Verbatim - own]

ACMC Matrix 5.3 (Continued)

Paragraph Comparison: Felipa

Partner Postings (by Idea Unit)	Felipa Postings (by Idea Unit)	Felipa Paragraph (by Idea Unit)
Picture 4:IU19**This is the real fascinating skyline of the American cities. IU20** In a relative short space is concentrate in height most of the workers of the U.S. IU21** The skyscraper is not only a high building IU22* but became a symbol of the power of American business.IU23** Picture 5: IU24** The Unites states a nation of immigrants. IU25** As consequence of that from the beginning the U.S. has been seen a mix of culture IU26**	On the 5th picture we can see IU21* what appears to be the golden gate bridge in NY City with the large skyscrapers in the background. IU22* You can also see some of the large boats IU23* which navigate the Hudson River IU24* as everybody know NY is one of the larger metropolis in the world for business and finances.IU25* Picture 6th IUI26* In the last picture we can see the	also I can see IU15 IU29* [Rephrased – own, synonyms,text organization IU, cohesion] how is the US powerful with the Pacific Ocean and the West and the Atlantic Ocean in the East. IU16-IU30* [Rephrased - own – extends] And conclusion I think IU17 [New - text organization IU, cohesion] that United States has an enormous control for a good welfare of the people. IU18 [new]

ACMC Matrix 5.3 (Continued)

Paragraph Comparison: Felipa

Partner Postings (by Idea Unit)	Partner Postings (by Idea Unit)	Partner Postings (by Idea Unit)
and the ethnic diversity is probably the most important thing.IU27**	main land IU27* which stretches from Los Angeles to NY and from Chicago to Houston. IU28*	
Picture 6: IU28**	We can also see IU29* that the US has the Pacific Ocean and the West and the Atlantic Ocean in the East. IU30* We can also observe the proximity of Cuba and Mexico to the south. IU31* Topic and controller idea.IU32* U.S is a large mass of land IU33* in which people from all over the world live IU34* and work together. IU35*	
Two principal cost in exam: IU29** the Atlantic cost and the Pacific cost in relation with a principal most populated cities in the U.S. New York City is a symbol of the Atlantic Ocean. IU30** Moreover Los Angeles and San Diego are two important cities for different reason IU31** situated on the Pacific Ocean.IU32**Topic and controller idea: IU33**		

ACMC Matrix 5.3 (Continued)

Paragraph Comparison: Felipa

Partner Postings (by Idea Unit)	Partner Postings (by Idea Unit)	Partner Postings (by Idea Unit)
Even though the United States has composed by large variety of enormous ethnic diversity it conserve own identity. IU34**Body:IU35** Supporting C.I. by example of what is recognizable nation identity of America. IU36** On the other hand what does make the real America today? IUI37** Example based from the description of the 6 pictures. IU38** In each one pictur has described America. IU39**		

ACMC Matrix 5.3 (Continued)

Paragraph Comparison: Felipa

Coding scheme:

1. <u>IU underlined – content idea unit</u>

2. <mark>Yellow Highlight Color – new idea unit</mark>

3. <mark>Grey Highlight Color – own idea unit</mark>

4. <mark>Blue Highlight Color – partner's idea unit</mark>

In her post-treatment wiring, Felipa entirely failed to consider her partner's contribution. Her paragraph was based either on her own idea units or on new idea units that were composed to support topics already discussed during the pre-writing stage and included in the paragraph. Three of the total 18 idea units from Felipa's paragraph were borrowed word for word from her ACMC pre-writing message; this constituted 16.67% of her paragraph (IU5, IU9, and IU14). The highest number of idea units in her paragraph, nine (50%), were a paraphrasing of her own idea units from the pre-writing message (IU1, IU2, IU3, IU6, IU10, IU11, IU12, IU15, and IU16). Thus, 66.66% of her post-treatment writing revealed high-level intertextual connections when idea units were considered in the analysis.

She also composed six new idea units. One of them (5.56%) showed medium level intertextual connection with her postings: she based one idea unit (IU4) on her idea unit from the discussion. Another of the new idea units she composed in her post-treatment paragraph showed low-level of intertextuality: she developed a new idea unit (IU7) based on a topic she proposed by her in the discussion. Thus, two of her new idea units revealed connections with her contribution to the pre-writing discussion, one at a medium level and one at a low level of intertextuality when idea units were used as a unit of analysis. Further, she composed four paragraph idea units (IU8, IU13, IU17, and IU18) which did not have intertextual connections with the pre-writing discussion; these new idea units constituted 22.22% of her paragraph. Table 5.4 presents the paragraph idea units composed by Felipa sorted by intertextuality type.

Table 5.4

Paragraph idea units: Felipa

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	0	3	0	9	0	1	0	0	1	0	4	18
Paragraph %	0%	16.66%	0%	50%	0%	5.56%	0%	0%	5.56%	0%	22.22%	100%

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

Felipa used five distinct strategies when rephrasing her idea units from her ACMC pre-writing message: (1) synonymous changes, (2) syntax changes, (3) idea unit extension, (4) combining two units from the discussion into one, (5) successful grammar correction. The most frequently used one was applying synonymic changes to the idea unit before including it in the text. She rephrased six of her paragraph text idea units, which constitute 33.33% of the entire paragraph: IU1, IU6, IU10, IU11, IU12, and IU15. For example, in idea unit11 "*We can find also*" she preserved the syntactic structure of idea unit29* "*We can also see*" replacing the verb "see" with its synonym and applying a word order change. Similar changes were applied to idea unit15. In idea unit 12 "*how the people enjoy in small towns and the peaceful way with less stress,*" the synonymous changes were applied on a phrasal level. The idea unit from the ACMC discussion is "*with lots of small buildings and houses where people live in a more peaceful way with less stress*" (IU14*).

All idea units to which Felipa applied synonymous changes but one (IU16) were changed syntactically as well, which constituted 27.78% of the idea units in her post-treatment paragraph writing. These changes varied from word order only (for example in idea unit11 "*We can find also*" and idea unit29* "*We can also see*") to major restructuring of the idea unit as it is in her paragraph idea unit 1 "*I am going to talk about life and people in the US.* " which was a rephrasing from her ACMC message, idea unit 2* "*I thing the topic is how live the people in the U.S.* There is one interesting aspect with regard to the idea units she either rephrased or used unchanged: three of them (IU3, IU11, and IU15) were used in the pre-writing message and in the paragraph for cohesion purposes.

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In addition to syntactic and synonymous changes, another rephrasing strategy Felipa applied was idea unit extension. She developed further two idea units adding details within the same idea unit (IU6 and IU16). The last of the four rephrasing strategies that Felipa applied was combining two idea units into one. She constructed idea unit 2 ("*In some parts we can see very big and larges countries for example Miami, Los Angeles Dallas with skyscrapers with a dense population*") by combining idea unit 9* ("*In the second picture I can see one of the US largest cities, like San Francisco Miami, Los Angeles Atlanta Dallas*") and idea unit 10* ("*which clearly shows large skyscrapers as well as very dense population***.")**. In her topic sentence (IU1), Felipa was able to correct the word order of idea unit 2* and adjust the sentence syntax to the synonymous organizational phrase she used.

Intertextual connections: conclusions. This student participated in the pre-writing task as if it were an individual brainstorming activity. This affected the manner in which she utilized the ideas from the pre-writing discussion – she ignored entirely her partner's contribution to the discussion and considered only hers to be used to support the composition of her paragraph. The ratio of matching distinct lexical items of her paragraph and the pre-writing discussion was low when both her and her partner's postings were considered for the DLI score calculation however, when only Felipa's posting was considered, the score was higher than the average score for the overall group and close to the medium of the ACMC group of participants. The intertextuality on organizational level was weak. The strongest intertextuality was revealed on an idea unit level.

Most of the intertextual connections identified between her writing and her

discussion posting when analyzed using idea units were of a high level: these were

mainly rephrased idea units. The strategies she used most frequently for rephrasing of her

pre-writing idea units were synonymous changes and syntax changes; she also applied

idea unit combination and extension. In many of the rephrased idea units, more than one

rephrasing strategy was applied. She used fewer idea units from her ACMC message

without any changes.

Felipa did not follow the organization of her message when composing her

paragraph. The only clear intertextual connection on the organizational level was traced

to the topic sentence of the post-treatment paragraph: she rephrased the topic sentence

proposed in her pre-writing posting. She also used in her paragraph either rephrased or

unchanged cohesion idea units used to organize her ACMC pre-writing.

Answering the Research Questions

How do peers participate in asynchronous CMC interactions?

Felipa used dominant patterns of interaction during the pre-writing stage. She and

her partner did not engage in a discussion; rather, they posted one message each;

although, Felipa started with recognition of her partner's posting and there was evidence

of her reading this posting. Felipa did not address, question or develop any of her

partner's ideas in the discussion. The number of content idea units Felipa composed at

the pre-writing stage were comparable in number to the number of content idea units

posted by her partner.

How do they use the specific ideas and language generated during these

interactions in their writings?

Felipa's pre-writing discussion and her post-treatment paragraph revealed low

intertextual connections on lexical level when both her and her partner's postings were considered; however, when only her posting was accounted for the intertextuality level was medium to high. The connections on organizational level were rather weak. Felipa's post-treatment paragraph revealed strong intertextuality: 77.88% of her paragraph was based on her pre-writing discussion posting. These connections were of a high intertextuality level; in other words, she either borrowed or rephrased idea units from the pre-writing discussion when composing her paragraph. The inclusion of new idea units was limited. She developed some idea units on topics that were not mentioned during the pre-writing stage. In addition, she transferred cohesion devices from the pre-writing discussion and showed some ability to correct the grammar of her own posts.

Case Study Four: Isabella

   Isabella's background. Isabella was a 28-year-old English language learner from Italy. She graduated from a university in Italy with a degree in marine biology. The semester in which the study took place, Fall 2005, was her first semester at the ELI. She was chosen as an actor of this instrumental case study because, based on the comparison of differences between the pulled z-score of the post-treatment and pre-treatment writings, she obtained the second highest writing gains in the ACMC group.

   When answering my ACMC interview questions, Isabella was always on time providing sufficient and detailed answers. Based on this interview and on my observations, I could conclude that she is not only an experienced computer user but also she enjoyed working with computers: "*I became to use the computer only 2 years ago when I started to write my thesi's degree and I have to say that now I can't stop to use.*" In addition, in her interview Isabella explicitly stated her awareness about the use of

CMC for purposes related to her studies: "*Through the computer infact I can…. communicate with some researchers who live in the other part of the world*." (The full text of the interview with Isabella is available in Appendix 5.8.)

Isabella was a language learner who could articulate her language learning goals and identify her difficulties. In the interview, she shared that the importance of developing good writing skills is related to the communicative nature of writing. The development of grammar was the most challenging aspect of language learning in general and particularly of writing:" *The most difficult I have when I write in English is to rende in corret grammar what I want to say*."

Isabella was a part of a Level III section that was not collaborative as a whole; some of the students in this section had personality conflicts which affected the overall dynamics of the group. However, Isabella was not directly affected by this personality conflict and was able to create good connections with most of her classmates. She took an active role in all of the face-to-face class and computer laboratory small group activities that I observed; in all cases she was the member of the group that led the task completion. Isabella was also active during class discussion, frequently contributing her opinion and ideas and not hesitant to ask her teacher clarification questions.

The treatment interaction. During the treatment interaction, Isabella posted only one long message in which she addressed all parts of the task: she provided a description of the pictures in the context of the task topic and made suggestions about the paragraph organization. The total number of the idea units of her message was 38, and the content idea units, in other words, idea units directly related to the discussed topic, were 21. Her partner posted after her. His message was shorter because, as he stated, he agreed with

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most of her paragraph content suggestions. Mostly, in his message, he added his ideas about paragraph organization. His message had a total of 28 idea units, 13 of which were related directly to the content of the discussed topic. Although Isabella recognized her partner's presence in the discussion, starting her message with address and apology for being late with her posting (line 2), she became disengaged with the task and did not respond to her partner's message despite his explicit request (line 46). In her message, Isabella expressed her ideas in an organized and methodical way and in a dominant manner. The dominant trend was mostly realized through her early disengagement. In her message, she showed potential for developing a collaborative discussion. The use of the modal auxiliary verbs "can" and "could" (lines 18 and 26) as well as "would" suggested that she would consider her partner's opinion. Further, she invited her partner to share his view on the task. The full text of the pre-writing discussion is presented below.

Log 5.4

ACMC Pre-writing Discussion: Isabella and Partner

1   **FROM:** Isabella (10/17/05 9:36 AM GMT -06:00)

2   Hello Partner sorry for my delay.

3   These are my ideas:

4   1 picture: describe the density in the 50th states if America: people in the state of

5   America are uniform distribuited and so in Haway island. In Alaska the majority

6   density of the people is in the south part of island that is the farest from Pole.

7   2 picture: a lot of the people live in the big cities, in high and essential skyscrapers

8   with a lot of levels.

9   3 picture: other people lives in comfortable and with few levels houses in the

10   suburbs far from the frenzied live of the big cities.

11   4 picture: in the US the people have a lot of origins. They came from England,

12   Ireland, Scotland, Germany, Spain, Mexico, Ireland, France, China, Sweden,

13   Vietnam, Canada and Korea.

14   5 picture: a lot of cities are built near the sea and often long bridges link 2 different

15   part of these cities.

16   6 picture: the most densely populated cities are New York on the Atlantic sea and

17   Los Angeles and San Diego on the Pacific coast.

18   ORGANIZATION:

19   These 6th photo can be correlated so:

20   First of all I would put the idea of the first picture: people in the state of.....

21   second I would put the idea inthe 6th picture: the most densely....

22   third I'd put the idea of 4th picture: in the US the people....

23   fourth I'd put the idea of 2nd picture: a lot of people live....

24   fifth I'd put the idea of 3th picture: other people live in comfortable...

25   sixth I'd put the idea of 5th picture: a lot of cities are built....

26   What do you think????

27   The topic sentence could be: The people of the us can be described by the

28   geographical distribution and origins.

29   Concluding idea: Mixture of race in spread territory (in order to enlarge!!!!).

30   **FROM:** Partner (10/19/05 11:07 AM GMT -06:00)

31   Hi, Izabella. You have done a tremendous work. However, your picture's ideas are

32   almost the same except some little change. so I don't need to rewrite them again.

33   the only difference is the organization of the ideas. Here how I would organize

34   them :

35   1. I would put the idea of the 4th picture telling about the race and origin of U.S

36   2. I will put the idea of the 1st picture : about density and geographical distribution.

37   3. """""" ' ' ' ' """""""""""""""""6th picture : the most populous cities

38   4. " " " " " " " " " 5th picture : telling about the situation of the construction and so

39   on.

40   5. " " " : " " " " " " " " " " " "2th picture telling about High level people.

41   6. " " " " " " " " " ?": " " " "" 3th picture, telling about the people living in the surburb

42   According to me ,the topic sentence should be ""The people of U.S. con be

43   distributed by diferrent ways.

44   topic sentence wiil be : people in U.S.

45   controlling ideas : different was to describe it.

46   Then we will have : ST1 '1st way is by race and Origin

47   ST2: description by density and geographical distribution

48   ST3: Living situation of the people.

49   so you tell me about what do you think.

   Although Isabella showed a dominant pattern of interaction, this pattern was

predetermined by her early disengagement from the task rather than by the tone or the

structure of her message. In her answers to the interview questions related to the task, she

stated: " *I feel good because* [partner's name] *is a good partner and we didn't have*

problem about the choice of the organization or what put in the paragraph. We were

suddenly agree about changes to do in our paragraph and how proceed." This showed

that she read and considered her partner's message for her paragraph composition. Also, it was clear from this answer that she did not perceive to have any disagreement or communication problems with her partner and she recognized and appreciated his contribution. However, once she perceived that they had reached an agreement, she abandoned the discussion. I observed similar disengagement with other ACMC dyads that participated in the study; in many cases, it was the factor determining the dominant pattern of the interaction.

When answering my interview questions about the treatment task, Isabella recognized her partner's contribution and explained her positive attitude towards the task to her partner's contribution. She stated that she felt comfortable about the task because she had a good partner: *"... my partner helped me changing the organization of the paragraph and it was really helpful.*" She perceived that reviewing her partner's and her own messages helped to improve her writing:"*I compared my suggestions and I review these in order to impruve the writting. It was really simple because* [partner's name] *gave me really good suggetions.*" Isabella also had some concerns about CMC discussion tasks stating that in a text-based environment it might be sometimes difficult to understand students' opinion; however, an interaction with a teacher could be very helpful in the learning process.

The paragraph: intertextual connections. The post-treatment writing of Isabella showed improvement on seven out of the eight text criteria considered for the study: (1) the amount of information present in a single focus (measured by mean length of idea units), (2) the quantity of overall information present (measured by the number of idea units), (3) lexical information per clause (measured through lexical density analysis), (4)

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vocabulary complexity (measured by analyzing the frequency of the unique words used), (5) rhetorical soundness, (6) presentation and development of main ideas, (7) and overall language use (the last three criteria were assessed using a multiple trait rubric). The only aspect of her writing that did not improve after the treatment was the syntactic complexity (measured by calculating the mean length of t-units). Her overall gain as measured with the difference between the pulled z-scores of post-treatment and pre-treatment writing was 1.31275934.

The intertextuality of Isabella's writing as analyzed on a lexical level was higher than the average of the ACMC group: the ratio of the matching distinct lexical items of her post-treatment paragraph and her pre-writing discussion was 44.68 and the ACMC group average ratio – 41.77. This suggests that Isabella used the pre-writing discussion text to a higher degree to support her own post-treatment writing. However, based on the fact that she posted more as well as on the further intertextual analysis on idea unit level, I could conclude that this higher ratio of distinct lexical items was a result of her higher contribution to the discussion as measured by idea units rather than the inclusion of her partner's messages into her writing.

The organization of her paragraph suggested strong influence of the discussion. She adopted the idea organization sequence proposed by her partner (IU17** - 20**). In many cases, she used her own rephrased idea units from the discussion. However, she reordered them to follow the paragraph organization her partner suggested. Further, she extended it with her own topic (*Cities on the coast,* IU33 - 38). The full text of the discussion and Isabella's paragraph are presented in a comparison matrix along with my analysis comments below (ACMC Paragraph Comparison Matrix 4: Isabella).

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ACMC Matrix 5.4

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
(2) Message 1- FROM: Partner Hi,Isabella. IU1** You have done a tremendous work. IU2** However, your picture's ideas are almost the same except some little change. IU3** so I don't need to rewrite them again. IU4** the only difference is the organization of the ideas. IU5** Here how I would organize them :IU6**	**(1) Message 1 - FROM:** Isabella Hello [partner's name] sorry for my delay. These are my ideas: IU1* 1 picture: IU 2* describe the density in the 50th states if America: IU3* people in the state of America are uniform distribuited and so in Haway island. IU4* In Alaska the majority density of the people is in the south part of island IU5* that is the farest from Pole. IU6*	The people in the United States can be represented by three ways; IU1 [New - develops own ideas, text organization – cohesion purposes] one of these is by origin and race; IU2-IU25**[Partner's rephrased – extended and synonym changes] the other is by geographical distribution, IU3-IU10**[Partner's rephrased and extended part of IU – syntax changes] and the last one is by the living status. IU4 [New – develops own ideas, summary] The people of the United States represent a melting pot of different cultures. IU5 [New – develops own ideas, summary] It is a mixture of black, white, and Asian people. IU6-IU12* and IU8**

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ACMC Matrix 5.4 (Continued)

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
1. I would put the idea of the 4th picture IU7** telling about the race and origin of U.S IU8** 2. I will put the idea of the 1st picture : IU9**about density and geographical distribution. IU10** 3. """""" ' ' ' ' """"""""""""""""""""6th picture IU11**: the most populous cities IU12**4. " " " " " " " " " 5th picture IU13**: telling about the situation of the construction and so on. IU14**	2 picture: IU7* a lot of the people live in the big cities, in high and essential skyscrapers with a lot of levels. IU8* 3 picture: IU9* other people lives in comfortable and with few levels houses in the suburbs far from the frenzied live of the big cities. IU10* 4 picture: IU11* in the US the people have a lot of origins. IU12* They came from England, Ireland, Scotland, Germany, Spain, Mexico,	[New – develops of own and partner's ideas] Most of the people who live in the US come from other country IU7-IU13* [Rephrased – own, develops one IU into 2] like England, Scotland, Germany, Spain, Africa, Mexico, Ireland, France, China, Sweden, Canada, Vietnam, and Korea. IU8-IU13* [Rephrased – own, develops one IU into 2] Most of the people of the US live in the fourth eight states of America IU9- [New develops partner's general suggestion in IU26**] and here they are uniformly distributed. IU10-IU4* [Rephrased – Own, splits one IU into 2, successful grammar correction]

ACMC Matrix 5.4 (Continued)

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
5. " " " : " " " " " " " " " " "2th picture IU15** telling about High level people. IU16** 6. " " " " " " " " ?": " " " "" 3th picture, IU17** telling about the people living in the surburb IU18** According to me IU19, the topic sentence should be IU20** ""The people of U.S. con be distributed by diferrent ways. IU21** topic sentence wiil be : people in U.S. IU22**	Ireland, France, China, Sweden, Vietnam, Canada and Korea.IU13* 5 picture: IU14* a lot of cities are built near the sea IU15* and often long bridges link 2 different part of these cities. IU16* 6 picture: IU 17* the most densely populated cities are New York on the Atlantic sea and Los Angeles and San Diego on the Pacific coast. IU18* ORGANIZATION: IU19* These 6th photo can be correlated so: IU20*	It's the same in Hawaii islands IU11-IU4* [Rephrased– own, develops part of own IU into full IU] while in Alaska the majority of the people lives in the southern part of this island. IU12 – IU5* [Rephrased – own, coherence device added, synonyms used, successful grammar correction] Maybe, the reason for this heterogeneous distribution is IU13 [New - cohesion] that the southern part is farther from the Pole IU14- IU6* [Rephrased - own – extended, successful grammar correction] and offers better environmental condition for living. IU15 [New]

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ACMC Matrix 5.4 (Continued)

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
controlling ideas : different was to describe it. IU23**	First of all I would put the idea of the first picture: people in the state of.....IU21*	The most populated cities in the US are Now York IU 16 - IU18* [Rephrased - own, clipped, separated into 2 IU] that is on the East coast. IU17-IU18* [Rephrased - own, clipped, separated into 2 IU] This city is the core of American economy and the culture. IU18 [New]Here the people use to meet in fashionable night club and resorts IU19 [New – develops partner's suggested topic, IU27*] or visit different museums. IU20 [New – develops partner's suggested topic, IU27*] On the opposite coast there are Los Angeles and San Diego, IU21-IU18* [Own – rephrased: synonyms, syntax]
Then we will have : IU24**	second I would put the idea inthe 6th picture: IU22* the most densely....IU23*	
ST1 '1st way is by race and Origin IU25**	third I'd put the idea of 4th picture: IU24 in the US the people....IU25*	
ST2: description by density and geographical distribution IU26**	fourth I'd put the idea of 2nd picture: IU26* a lot of people live....IU27*	
ST3: Living situation of the people. IU27** so you tell me about what do you think.IU28**	fifth I'd put the idea of 3th picture: IU28* other people live in comfortable...IU29*	

ACMC Matrix 5.4 (Continued)

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
	sixth I'd put the idea of 5th picture: IU31* a lot of cities are built....IU32* What do you think???? IU33* The topic sentence could be: IU34* The people of the us can be described by the geographical distribution and origins. IU35* Concluding idea: IU36* Mixture of race in spread territory IU37* (in order to enlarge!!!!). IU38*	two really densely cities too. IU22 – IU18* [Own – clipped, coherence added] These cities are known for the ocean and beaches, mountains and natural parks, IU23 [New]along with city life energy that is unsurpassable. IU24 [New] Many people of the United States live in the big cities, in high and essential skyscrapers with a lot of levels. IU25-IU8* [Rephrased - own – synonyms] Houston and Chicago are in the middle of the US IU26 [New] and are really different from each. IU27 [New] For example Chicago is characterized from breezy winter IU28 [New]

ACMC Matrix 5.4 (Continued)

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
		while Houston has a mite weather during the while year. IU29 [New] Even though a lot of people prefer to live in the big cities IU30 [New] where it is possible to find amusements and offices close at hand, IU31 [New]other people live in one-story house in suburbs far from the exciting life of the big cities. IU32- IU10* [Rephrased - own – rephrased, synonyms, successful grammar correction] Many cities are built near the coast IU33-IU15* [Rephrased - own – synonyms] and often long and impressive bridges link two different parts of these cities; IU34-IU16* [Rephrased - own – extended, successful grammar correction]

ACMC Matrix 5.4 (Continued)

Paragraph Comparison: Isabella

Partner Postings (by Idea Unit)	Isabella's Postings (by Idea Unit)	Isabella's Paragraph (by Idea Unit)
		from those bridges people can enjoy a wonderful sight of the coast. IU35 [New] So we can speak about of America IU36 [New – cohesion]like a big country that offer various spaces in which live IU37 [New] and where you can meet a lot of people from other countries. IU38[New]

Coding scheme:

1. IU underlined – content idea unit

2. Yellow Highlight Color – new idea unit

3. Grey Highlight Color – own idea unit

4. Blue Highlight Color – partner's idea unit

In her paragraph, Isabella composed 38 idea units. Most of them (15 or 39.48%) were new idea units which presented topics not addressed in the pre-writing discussion. In addition, Isabella composed seven idea units which revealed low-level intertextual connection. Three of these idea units (IU9, IU19, and IU20) developed discussion topics suggested by her partner, which was 7.89% of her paragraph text. Further, in three idea units (IU1, IU4, and IU5) she developed her own topics, which constituted 7.89% of her paragraph text. One of the paragraph idea units, idea unit 6 (2.64%), developed a topic which was a combination of Isabella's and her partner's topics proposed in the discussion. Thus, most of the new idea units revealed no intertextual connections.

Isbella also established intertextual connections between her paragraph and the pre-writing postings at a high level. She extensively used her own idea units from the discussion after rephrasing them; the total of such idea units in her paragraph was 14 (36.84%). Only two partner's idea units (IU10** and IU25**) were used in her paragraph (IU2 and IU3) after rephrasing. Thus, her inclusion of partner's at high and low intertextuality level was rather weak. No idea units revealed medium level of intertextuality. Table 5.5 presents Isabella's paragraph idea units sorted by intertextuality type.

Table 5.5

Paragraph Idea Units: Isabella

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	0	2	0	14	0	0	0	3	3	1	15	38
Paragraph %	0%	5.26%	0%	36.84%	0%	0%	0%	7.89%	7.89%	2.64%	39.48%	100%

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

With her and her partner's idea units taken from the pre-writing discussion, rephrased and included into the paragraph, Isabella used seven rephrasing strategies: (1) syntax changes, (2) synonymous changes, (3) idea unit extension of part or full idea unit from the discussion, (4) extension of full idea unit development of one discussion idea unit into two, (5) clipping of a discussion idea unit, (6) successful grammar correction, (7) addition of a coherence device. In many of the idea units more than one rephrasing strategy was applied.

The strategy that Isabella used most frequently was developing two paragraph idea units from one discussion idea unit; she composed six idea units using this strategy (IU7-8, IU10-11, IU16-17). For example idea units 16 and 17 ("*The most populated cities in the US are Now York* IU16 *that is on the East coast.* IU17") were developed based on idea unit 18* from the discussion (*"the most densely populated cities are New York on the Atlantic sea and Los Angeles and San Diego on the Pacific coast"*). She also made synonymous changes when rephrasing her own and her partner's idea units. The total number of idea units with synonymous changes applied was 7 (IU2, IU3, IU12, IU21, IU25, IU32, and IU33). An example of this synonymous change strategy is the following idea unit used in the pre-writing discussion: "*In Alaska the majority density of the people is in the south part of island*" (IU5*) was rephrased to "*while in Alaska the majority of the people lives in the southern part of this island.*" (IU12). One synonymous change was applied here: the verb "*to be*" was replaced by the more specific "*live.*" This idea unit is also an example of multiple strategies application. When rephrasing it, Isabella added a coherence devise "*while*" in order to make the idea unit fit into the paragraph sentence. This strategy was used by her one more time in idea unit 22. Isabella also successfully

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corrected the erroneous noun phrase from the discussion ("*the majority density of the people*" to "*the majority of the people*"). Successful editing of grammar was evident in the rephrasing of five idea units (IU10, IU13, IU14, IU32, and IU34).

Isabella extended some of her discussion idea units within the idea unit itself using the regrouping of phrases in the discussion and paragraph idea units. For example, the phrases in the following idea units from the discussion "*In Alaska the majority density of the people is in the south part of island* (IU5*) *that is the farest from Pole.*" (IU6*) were regrouped in the paragraph to render: "*while in Alaska the majority of the people lives in the southern part of this island.* (IU12 – IU5*) *Maybe, the reason for this heterogeneous distribution is* (IU13) *that the southern part is farther from the Pole*" (IU14- IU6*). This regrouping triggered the extension of idea unit 14 in the paragraph. The last two rephrasing strategies used by Isabella were clipping and syntax changes. An example of both these strategies could be found in idea unit 21 from Isabella's paragraph. In the paragraph, she wrote: "*On the opposite coast there are Los Angeles and San Diego*" (IU21). She based this idea unit on idea unit 18* from her pre-writing discussion message ("*the most densely populated cities are New York on the Atlantic sea and Los Angeles and San Diego on the Pacific coast.*") Here she made several changes. In addition to replacing the adjective "Pacific" with a synonymous in this context adjective "*opposite,*" she shortened (clipped) the idea unit keeping only the second part of the discussion idea unit. She also made a syntactic change by adding the existential predicate "*there are.*"

Isabella composed a high number of new idea units. The 11 idea units that were composed to support and develop an already presented topic or to summarize several

topics presented in the discussion into one idea unit in the paragraph text were IU1, IU4, IU5, IU6, IU9, IU15, IU18, IU19, IU20, IU35, and IU36. She added new idea units to support paragraph cohesion (IU13 and IU35). In the second part of her paragraph, she composed ten idea units that were not a direct support to a pre-writing discussion idea unit incorporated into the text (IU23, IU24, IU26, IU27, IU28, IU29, IU30, IU37, and IU38).

Intertextual connections: conclusions. Although Isabella applied a dominant dyadic interaction pattern, she considered some of partner's suggestions in her writing. She followed his advice on paragraph organization, and there was a clear connection between two of his idea units from the discussion and two of Isabella's paragraph idea units. However, most of the idea units that showed clear connection between Isabella's paragraph and the discussion postings were intertextually connected with her own idea units. In fact, in her paragraph, she used all of the ideas which she shared during the discussion. This suggests that the connection of the pre-writing discussion and her paragraph was rather strong, which is further supported by the high ratio of matching distinct lexical items. However, this strong connection is mainly with her portion of her contribution to the pre-writing discussion.

On the lexical level, the intertextuality of Isabella's paragraph and pre-writing posting was higher than the average for the ACMC group. With regard to organization, Isabella considered her partner's organization suggestion. At a high-level of intertextuality Isabella used complex and extensive rephrasing, applying various techniques including syntax changes, using synonyms, merging, splitting, and clipping idea units, mainly considering her own ideas. Her consideration of partner's contribution

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was limited. Isabella composed a significant number of new paragraph idea units based on discussion topics, the majority of them being of a low intertextuality level. She also composed a high number of new idea units based on topics not addressed during the pre-writing stage; some of which served paragraph cohesion purposes. She demonstrated ability for successful correction of erroneous structures from the discussion.

Answering the Research Questions

How do peers participate in asynchronous CMC interactions?

Isabella contributed significantly to the pre-writing interaction. However, she demonstrated a dominant pattern during the interaction. Although there was a potential for the pre-writing interaction to develop in a collaborative manner, Isabella's early disengagement from the discussion prevented such development.

How do they use the specific ideas and language generated during these interactions in their writings?

Isabella approached her paragraph writing with a collaborative set of mind recognizing and using her partner's paragraph organization suggestions. The intertextuality connections on the lexical level were strong. The organizational level intertextuality was also evident. The intertextual connections at an idea unit level were mainly at a high level of intertextuality and with connection to her own idea units. She also composed a significant number of new idea units that did not show intertextual connections with the pre-writing discussion.

Participants' Backgrounds

When comparing Felipa's and Isabella's background, I found that there were some similarities and differences as well. They both were approximately the same age. They both were able to articulate their difficulties with writing in English and their goals in terms of writing development. In addition, both Isabella and Felipa were experienced computer users who enjoyed using computers in their everyday life, including computer-mediated communication. However, in her answers to the interview questions, Isabella demonstrated an awareness of the importance of the computers for academic purposes; this awareness was not evident from Felipa's answers to the interview questions.

Pre-writing Interaction

During the pre-writing discussion, both Isabella and Felipa demonstrated dominant patterns of interaction. Although at certain points of the completion of the pre-writing task, both of them demonstrated recognition of their partner's presence, neither one of them engaged into a discussion with her partner. This dominance transferred to the way they approached their post-treatment writing as well: Felipa disregarded completely her partner's opinion, while Isabella's consideration of partner's ideas was limited.

The attitudes to the pre-writing discussion of both actors were positive. Isabella expressed satisfaction of the fact that she and her partner could reach an agreement. Felipa shared that in the process of working on her pre-writing discussion posting the task itself became clearer. However, she did not mention her partner's posting to be helpful in this respect.

There was no strongly pronounced difference when comparing their postings on idea unit level. What unifies the pre-writing task completion of the two dyads has the considerable contribution of both Isabella and Felipa: they posted a high number of idea units and most of them were content idea units. In other words, these idea units developed the topic under discussion.

Post-treatment Gains and Intertextual Connections

In their post-treatment paragraphs, both Isabella and Felipa showed gains on multiple criteria. They both showed improvement in their ability to include more information in a single focus, as measured by mean length of idea units. They showed higher degree of lexical information per clause as measured by lexical density analysis as well. The rhetorical soundness, topic presentation and development, and overall language use, as measured using a multiple trait rubric, also improved. Thus, their higher gain was not a result of improving on any single text analysis criterion but rather on multiple criteria.

The intertextual connections of their post-treatment paragraphs on lexical level were different. Isabella showed a higher ratio use of distinct lexical items from the pre-writing discussion as compared to Felipa. However, these results should be interpreted keeping in mind that the postings of both the actors and their partners were considered when the DLI score was calculated. Isabella's matching distinct lexical items ratio score might be higher due to the fact that her partner posted significantly less than Isabella did, unlike Felipa's partner who posted a few idea units more than Felipa. When the matching lexical items ratio was calculated taking into account only Felipa's posting, its level was close to the ACMC group medium and higher than the average for the whole group of

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students who participated in the study. Thus, the different amount of partners' contribution affected the DLI ratio score of both Isabella and Felipa due to the fact that both of them mainly considered their own postings and their partners' contribution to the ACMC discussion was different in length. I would suggest that the intertextuality on the lexical level for these high-gain participants was medium to high within the ACMC group, higher for the overall group of participants, and the highest when compared to the other actors in the case studies.

The intertextuality on organizational level was also different. While Isabella considered her partner's suggestions for paragraph organization and implemented them in her paragraph, thus showing stronger organizational intertextuality, in Felipa's paragraph the intertextuality on organizational level was only evident with the topic sentence. The rest of the ideas proposed in the pre-writing posting and related to paragraph organization were not included into the paragraph.

When analyzing the intertextual connections of Felipa's and Isabella's pre-writing discussion and post-treatment paragraph texts, it appears that they have several commonalities. They both considered mainly their own contributions to the discussion: Felipa entirely disregarded her partner's ideas, while Isabella considered her partner's suggestions only in regards with paragraph organization and used two of her partner's idea units after considerable rephrasing. They used similar paraphrasing strategies including: (1) the use of synonyms and synonymic phrases, (2) syntactic changes within an idea unit; (3) extending idea units, (4) adding organizational words and phrases, some of them borrowed from the discussion, for paragraph cohesion, and (5) successful grammar correction, which was demonstrated by a higher extent by Isabella.

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In addition, there were certain differences in Isabella's and Felipa's rephrasing techniques as well. Felipa combined two idea units from the discussion into one. Isabella, on the other hand, used parts of her own idea units from the discussion and developed them into full idea units in her paragraph or developed one idea unit from the discussion into two idea units in the paragraph. However, applying these strategies, both of them demonstrated an ability to move beyond the single idea unit consideration when borrowing them from the pre-writing discussion. (Refer to Appendix 5.5: Ordered Comparison Matrix for a table presentation of the case comparison.)

Answering the Research Questions

How do peers participate in asynchronous CMC interactions?

The two ACMC actors, Felipa and Isabella, who had high gains, demonstrated dominant patterns of interaction during the pre-writing discussion. The participants in the discussion posted their opinions and did not revisit the discussion afterwards. I noticed that in both cases, there was an early disengagement from the discussion demonstrated by one of the peers. The two case studies of high-gain ACMC actors suggest that, when completing the discussion using ACMC mode of communication, the actors may fail to create a common discussion space and may be likely to neglect their partners' contributions. These high-gain actors were able to contribute approximately the same amount of information to the discussion, as measured with idea units.

How do they use the specific ideas and language generated during these interactions in their writings?

The intertextual connections of the pre-writing discussions and the post-treatment paragraphs of Isabella and Felipa were different. While Isabella's matching DLI score

was higher than the average, Felipa's was lower. Thus, on lexical level the intertextuality of the two high-gain ACMC participants was different. In terms of intertextuality on organizational level, there were also differences: Felipa's paragraph showed weak connection with her own proposed organization, while Isabella used consistently her partner's paragraph organization ideas.

At idea unit level of intertextuality Felipa and Isabella showed some commonalities. They both were able to establish connection of a high intertextuality level by either borrowing verbatim or rephrasing idea units. They mainly considered their own idea units when establishing this intertextuality. The paraphrasing techniques applied were similar and included changes within idea unit boundaries as well as merging and/or splitting idea units from the discussion when paraphrasing them in their paragraphs.

ACMC Actors: Comparison

The comparison of the four ACMC case studies presented above revealed that there were both commonalities and differences between the actors who demonstrated high and low gains in their post-treatment writings. Below, these differences and commonalities are presented in the context of the research questions which the case studies aimed to answer: *How do peers participate in asynchronous CMC interactions? How they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?* The following trends considered in the data analysis were compared: (1) background, (2) the pre-writing CMC interactions specifics, and (3) post-treatment paragraph gains and intertextual connections.

Comparison of the Participants' Backgrounds

The background of the actors who demonstrated high and low gains in their post-treatment writings showed that student's age and previous computer experiences might be related to their computer-related experiences in language learning settings and their willingness to use computers. Shin, who was the oldest one of the case study actors and the actor with the least computer experience shared that she felt uncomfortable when working with computers and during the task completion. I also noted this trend during my computer class observations. These observations were confirmed also by the analysis of data outside of the case studies, presented and discussed in Chapter IV. The other two students who experienced some difficulties during the training period were, similarly to Shin, of an age significantly higher than the average age of the intermediate level students who participated in the study and had limited or no computer experience prior to their enrollment to the intensive English language program. Further, both experienced and non-experienced computer users may fail to benefit from the pre-writing discussion as assessed by using the criteria proposed in the study. Azad, the other low-gain actor, reported feeling comfortable when using computers but also demonstrated lower gains in his post-treatment writing.

The Pre-writing Interaction

With regard to the dyadic patterns of interaction demonstrated during the pre-writing discussion, the comparative case study analysis showed that dominant patterns were employed by all case study actors who participated in the ACMC pre-writing task regardless of their gain. However, all of them attempted at a certain point in their ACMC interaction to engage their partner in discussion of the assigned topic. These attempts

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failed, and none of the ACMC case study participants were able to create a common discussion space.

There was a prominent difference between the pre-writing discussions of the low ACMC participants and the ACMC participants with high gains in terms of their contribution to the discussion. The participants who had low gains contributed more turns (Azad, 6 and Shin, 4), than the participants with high gains (Felipa, 1 and Isabella, 1). However, the number of idea units that the low-gain ACMC actors posted during the discussion was significantly lower than the number of idea units posted by the high-gain actors: Shin posted 15 idea units, eight of which pertained to content, and Azad posted 10 idea units, eight of which were also content, while Felipa posted 38 total idea units with 26 content idea units, and Isabella posted 35, of which 21 were content. Thus, it appears that, although there was no difference in dyadic interaction pattern of the students who had high and low gains, the contribution to the pre-writing discussion of the high-gain actors was more significant.

Post-treatment Paragraph Gains and Intertextual Connections

In their post-treatment paragraphs, the high- and low-gain ACMC participants improved on different criteria of their writing. The high-gain participants showed gains on multiple criteria. They improved their ability to include more information in a single focus, as measured by mean length of idea units and they showed higher degree of lexical information per clause as measured by lexical density analysis. The rhetorical soundness, topic presentation and development, and overall language use, as measured using a multiple trait rubric, were also improved. Thus, the higher gain was not a result of the improvement of a single criterion but rather an improvement of multiple criteria. On the

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other hand, the low-gain participants improved on fewer aspects of their writing: Shin improved only the presentation and development of her paragraph, and Azad showed ability to use a higher amount of information in a single focus (as measured by mean length of idea units) and higher lexical information per clause (as measured through lexical density analysis). Table 5.6 presents the textual aspects improved by the ACMC actors.

Table 5.6

ACMC Actors: textual aspects improved

Tex Analysis Criteria	Low ACMC		High ACMC	
	Azad	Shin	Felipa	Isabella
Syntactic complexity (T-units mean length)			X	
Information in a single focus (mean length of idea units)	X		X	X
Overall information present (number of idea units)				X
Lexical information per clause (lexical density)	X		X	X
Vocabulary complexity (frequency of unique words)				X
Rhetorical soundness			X	X
Presentation and development of main ideas		X		X
Overall language use			X	X

With regards to intertextual connections of the pre-writing discussion and the paragraphs written based on this discussion, it appeared that the actors who participated in a CMC pre-writing discussion and had low-gains, demonstrated mainly weak intertextual connections when these connections were measured on a lexical level. The two high-gain actors had different results. One of the high-gain participants, Isabella, wrote a paragraph that had high intertextual connections on a lexical level, while the other, Felipa, demonstrated low intertextuality on a lexical level in her paragraph when the whole ACMC interaction was accounted for; however, the lexical intertextuality was medium to high, with her own posting. Keeping in mind that both actors used in their paragraphs mainly their own topics and idea units from the discussion, this difference could be could be attributed to the different amount of partner's contribution to the discussion. On the organizational level, there was no consistent difference between the high- and the low-gain actors: one member of each gain dyad did not have any intertextual connections on an organizational level and the other did. However, the intertextual connections on organizational level, when they existed, were rather loose. When idea units were considered as a unit of intertextuality analysis, it appeared that the ACMC actors established intertextual connections on all four levels. The idea unit tabulation by type and level of intertextuality for the four ACMC actors is presented in Table 5.7.

Table 5.7

ACMC Actors: Paragraph Idea Units and the Level of Intertextual Connections

Participant and Level		Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Low ACMC	Azad	Number of IUs	1	0	2	5	0	0	0	0	3	0	0	11
		Paragraph %	9.1	0	18.18	45.45	0	0	0	0	27.27%	0	0	100
	Intertextuality		High: 72.73%			Medium: 0%			Low: 27.27%			None: 0		100
	Shin	Number of IUs	1	0	0	5	5	1	0	0	0	0	8	20
		Paragraph %	5	0	0	25	25	5	0	0	0	0	40	100
	Intertextuality		High: 30%			Medium: 30%			Low: 0			None: 40%		100

Table 5.7 (Continued)

ACMC Actors: Paragraph Idea Units and the Level of Intertextual Connections

Participant and Level	Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
	Felipa												
	Number of IUs	0	3	0	9	0	1	0	0	1	0	4	
	Paragraph %	0	16.66	0	50	0	5.56	0	0	5.56	0	22.22	100
	Intertextuality	High: 66.16%				Medium: 5.56%			Low: 5.56%			None: 22.22%	100
	Isabella												
	Number of IUs	0	0	2	14	0	0	0	3	3	1	15	
	Paragraph %	0	0	5.26	36.84	0	0	0	7.89	7.89	2.64	39.48	100
	Intertextuality	High: 42.1%				Medium: 0%			Low: 18.42%			None: 39.48%	100

High ACMC

Table 5.7 (Continued)

SCMC Actors: Paragraph Idea Units and the Level of Intertextual Connections

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

When approaching the intertextual connections through the comparison of the idea units from the discussion and the following writing, it appeared that all of the actors considered their discussion when composing their paragraphs. When analyzing the data, I could not find consistent differences in this respect between the low-gain and the high-gain participants. Azad's paragraph had the highest degree of intertextual connection with the pre-writing discussion (100%). In his paragraph, most of his idea units were either used verbatim or were paraphrased idea units from the discussion; thus, most of the intertextual connections were of a high level. In Shin's paragraph, 60% of the idea units were either of high or medium level of intertextuality, and the rest were new. Felipa composed paragraph idea units that demonstrated intertextual connections on all three levels with the majority of the idea units being of medium intertextuality with the pre-writing discussion. Finally, the idea units of Isabella's paragraph were mostly of high intertextuality level (42.1%) and some were of low intertextuality level (18.42%). All of the participants considered mainly their own ideas when composing their post-treatment paragraphs. One of the actors, Felipa, did not include any of her partner's ideas, and none of the actors borrowed a partner's idea unit word for word.

All four participants employed multiple paraphrasing strategies when intergrating their own and partner's idea units into their writings. The common rephrasing strategies the low-gain ACMC participants used when including discussion idea units into their paragraphs were: (1) use of synonyms; (2) syntactic changes; (3) idea unit clipping, and (4) content changes. The high-gain ACMC participants used the following paraphrasing strategies: (1) the use of synonyms and synonymic phrases, (2) syntactic changes within an idea unit, (3) altering the boundaries of the idea units through extending, clipping, or

combining two idea units into on, (4) adding organizational words and phrases, some of them borrowed from the discussion, for paragraph cohesion, and (5) successful grammar correction, which was demonstrated by a higher extent by Isabella. Thus, the difference between the high- and the low-gain participants were that the high-gain ones showed the ability to move beyond the single idea unit consideration when incorporating the pre-writing ideas into their writings, while this was not evident in the writings of the low-gain actors. Further, the high-gain participants were also able to transfer cohesion devices and to perform successful error corrections to erroneous phrases from the discussion when including them into their paragraphs.

The two high-gain participants tended to include more new idea units in their post-treatment writing. These new idea units were of several different types in terms of their relation to the pre-writing discussions: (1) further development of topic stated in their pre-writing discussion and transferred into their writings, (2) new idea units added for text cohesion, (3) new idea units developing the topic of the paragraph but not mentioned in the discussion, (4) new idea units summarizing several points made during the discussion (this was used only by Isabella), (5) the inclusion of new idea units was limited or non-existent in the paragraphs of the low-gain ACMC participants.

Answering the Research Questions

How do peers participate in asynchronous CMC interactions?

I found that the ACMC participants did not differ in terms of their pre-writing dyadic interaction. Regardless of their post-treatment gains, they applied dominant patterns during the pre-writing discussion. However, there was a difference in their

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contribution to the discussion. The high-gain participants contributed more to the discussion than the low-gain participants.

>*How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?*

When analyzed on a lexical level, the intertextuality of the ACMC participants' paragraphs and pre-writing discussions was of various levels which were not related to achievement level. There were some intertextual connections of the pre-writing discussions and the paragraphs of two of the actors; however, these connections were rather loose. Nevertheless, the intertextual analysis on idea unit level revealed stronger intertextuality. Both high-gain and low-gain participants composed 60% or higher of their paragraphs considering specific idea units from the discussion or topics addressed during the discussion. However, these were mainly their ideas units or topics, and a limited number of partners' idea units or topics were used. Thus, their dominant patterns of interaction affected their writing. The ACMC participants were limited in their consideration and inclusion of their partner's idea units or topics.

All participants applied various paraphrasing techniques; however, the high-gain participants were able to regroup idea units from their pre-writing postings, perform successful grammar correction, and incorporate cohesive devises while the low-gain participants were not able to do this. In addition, the high-gain participants attempted to develop more new ideas in their post-treatment writing. Lastly, the advance of the high-gain participants' writing was not determined by improving significantly on one of the

considered text analysis criterion but rather on a group of criteria; the low-gain

participants improved their writing either on one or two criteria.

Further in this chapter, four case studies of students who participated in the pre-

writing discussion in a synchronous environment are presented. Their pre-writing

interactions and the intertextual relations of their post-treatment texts were described and

compared based on the post-treatment gains. The concluding section of the chapter

presents the overall comparison of the eight instrumental case studies. (Refer to

Appendix 5.5: Ordered Comparison Matrix for a table presentation of the case

comparison.)

<div align="center">

SCMC Actors, Low Gains Case Studies

</div>

Case Study Five: Ajwad

Ajwad's background. Ajwad was part of a large group of Saudi Arabian students

who came to the ELI as part of a Saudi government program. He was one of the older

students in the group. At the age of 27, he had completed a university program in Saudi

Arabia receiving a bachelor's degree in industrial engineering. In addition to the ACMC

interview I had with Ajwad, he also volunteered for a face-to-face interview answering

some of the questions which he did not have the opportunity to answer during the ACMC

interview. I observed him in two computer laboratory sessions as well as in two face-to-

face classes. My further presentation of Ajwad's background is based on these

observations and on his answers to my interview questions provided both in the ACMC

and the face-to-face interviews.

Based on my observations, Ajwad was a respected member of the Saudi Arabian

student group. These students, especially in the beginning of the semester, stayed close

together. In most of the instances that I observed him during small group activities, he was the leading group member that would often take charge of the task completion and would direct other members of the group during the discussions making sure that they did not deviate from the task. In some of the cases, he would take over the discussion in order to clarify his view and convince the group members about his opinion.

During class discussions, he preferred to interact directly with the teacher and to be actively involved in the interaction during class discussions. When he was not personally involved in a task completion or discussion he would lose interest and get distracted. This usually happened during teacher-class discussion or teacher's presentations that were not interesting for him or during which he was not directly addressed by the teacher. On several occasions, I noticed him to look over the shoulder of a student engaged in something not related to class discussion, to drawing figures in his textbook or to express his disinterest through body language – looking around and tapping his fingers on the desk. During the face-to-face interview I had with Ajwad, he shared his perceptions of class organization at the ELI being too rigid leaving little space for creativity and personal involvement. Thus, he demonstrated a higher motivation to contribute to discussions when he was in the center of it and was able to share his personal opinion on the topic under discussion. This desire to contribute his personal opinion was evident in his view about the nature of writing which he shared in the interview with me. The full text of the ACMC interview along with my notes from the face-to-face interview is provided in Appendix 5.9.

In Ajwad's answers related to his opinion about writing, one theme was prominent: writing as an important means of communication with other people. More

specifically, Ajwad emphasized writing as an important means of communication of his ideas: "*I am one person who thinking, and I can't deliver my idea to large number from the people I focus to them, so if I am a good writer and I have good idea the people will resave my idea.*" The theme of writing as an important means of communication was repeated again in his answer about the importance developing writing skills in English: "*It is very important to me, because if I write in any subject even if I tack deferent position I will found many writer wrote in the same subject so I need in that time to be unique in that subject, In idea, in the steppes to present my subject, make my subject easy to understand witch mean good skills in writer.*" When sharing the difficulties he experienced when writing in English, Ajwad again stressed communication. Along with spelling, he identified the formulation of his ideas in English as being a challenge for him. Communication of his ideas to other people when writing in English was also the theme which emerged in his answer about the enjoyable things related to writing in English: "*If I can delivery my idea to the people, and I can effect to the people so I make change.*"

During the interview, Ajwad shared that he had a considerable experience with computers. He started using computers when he was 13-year-old, when he enrolled in his first computer class. In his university course of studies, computers played an important role. In the interview, he stated the following: "*In the first class in my field, the chairmen of industrial engineering was the instructors, and I remember what he said about using computer, he said 'any one in industrial Engineering who don't have computer in his home, he can transfers to another department, and we are welcome to help any student to bay computer.'*" Ajwad gave a general answer about his CMC experiences. He answered

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that he used computer to communicate with other people: "*to contact or take appointment.*" It seems to me that he had a limited or no experience communicating via computer in an educational setting. I found further confirmation of this in his perception of the CMC pre-writing treatment task.

   The treatment interaction. Ajwad shared that the CMC interaction provided him with the opportunity to view language "*in the static position*" and learn about partner's opinion. He wrote in his answer about the treatment task for the ACMC interview: "*It was something new for me, to see the word in the static positions, and some time I need to stand out of habit, just to cut the rotten. Also it give me good chance to listen to the people in deferent ways so at least I can look to the picture from deferent ways.*"

   Ajwad did not answer some of the questions related to the treatment CMC task used in the study during the ACMC interview. However, he was willing to talk to me providing some of these answers in a face-to-face interview. He told me that he liked the chat better than the ACMC interaction training tasks. However, he did not like the interface of L.E.C.S. In his opinion, chat could support the development of better writing skills. His experience was that chat helped him to organize his ideas in a better way, and he confirmed again that he benefited from his partner's ideas. However, he had some concerns with regards to the chat. When asked if typing hindered his discussion online, he answered: "*Absolutely yes, because when I speak with the people we have million and million idea to discus, and we need to speak continuously and quickly to represent all these idea, but in the computer I thing it is limited.*" Based on this answer, I assume that he perceived his SCMC discussion to be less productive than a face-to-face discussion. Following is the complete log of the SCMC interaction of the Ajwad's dyad.

Log 5.5

SCMC Pre-writing Discussion: Ajwad and Partner

1   Partner: youhouuuuuuuuuuu

2   Partner: Is someone here?

3   Ajwad: hi

4   Ajwad: her i am

5   Partner: haaaaaaaaaa

6   Partner: we will discuss about ideas first

7   Ajwad: ok

8   Partner: I think that we have to talk about ethnical diversity, obesity, caractere,

9   way of life

10   Ajwad: O.K

11   Partner: do you have other ideas?

12   Ajwad: NO IT IS OK

13   Partner: ok.... so we can go on

14   Partner: what about the paragraph organization?

15   Ajwad: defrent poeple in the same blase coming from all the wored

16   Ajwad: we will talk about Amireca in general

17   Partner: ????

18   Ajwad: what is going on?

19   Partner: we have to choose a topic sentance

20   Ajwad: ok

21   Partner: for example: People in America are very different

22   Ajwad: what is your sudgesting

23   Ajwad: i like this idia

24   Ajwad: ok then we write about the resons

25   Partner: let's choose a main idea

26   Partner: ok

27   Partner: immigration

28   Ajwad: yes

29   Ajwad: why the peopel come to usa

30   Partner: porety vs. rich (rich are often white and poors are often black or come

31   from the minorities)

32   Ajwad: what the advanteg they well get fron usa

33   Partner: yes

34   Ajwad: but i like to spike in general

35   Partner: to spike? what does it mean?

36   Ajwad: the peopel coming to USA FROM ALL THE WORD, CUS THEY GET

37   GOOD OFFER IN WORK, STUDY, GO TO HOSPITEL

38   Ajwad: somthing like that

39   Partner: and for the american dream

40   Partner: we can atalk about what we see in our culture class

41   Ajwad: we can also start with the history of immegrint

42   Ajwad: AS WE STUDY IN BILL CLASS

43   Partner: YES!!!!!

44   Partner: :)

45   Ajwad: SO OUR PRAGRAPH WELL BE :

46   Partner: hooooooo it's just a brainstorming today! great! we don't have to write a

47   paragraph

48   Ajwad: 1. HISTORY OF IMMEGRINT , 2. WHOME? 3. WHAT IS THE

49   ADVANTEG FRO IMMIGRINT

50   Partner: so actually.... we can talk about immigration. Ameri

51   Partner: why is the contry so diversified

52   Ajwad: diversified?

53   Partner: do you understand all teh pictures?

54   Ajwad: YES

55   Partner: one is about the number of people, another is about immigration, an other

56   one shows rich's and poor's houses

57   Ajwad: what are u doing? can u tell me

58   Partner: but I don't figure out the 3 others

59   Partner: I'm chatting!

60   Ajwad: i think #3 ABOUT

61   Ajwad: THE OLD HUES

62   Partner: the old hues?

63   Ajwad: AND NUMBER 4 ABOUT UNITED OF PEOPEL IN USA, CUSE THEY

64   WAS FROM DEFRINT COUNTRY AND NOW THEY FROM USA

65   Ajwad: #5 ABUT THE BILDING TODAY

66   Ajwad: MAP FOR USA TODAY

67   Partner: the fifth one is NY city

68   Partner: yes I can see the pictures!thank you!

69   Partner: ;)

70   Partner: But I try to understand the rapport with the People in USA

71   Ajwad: YES BUT I THINK IT IS TO SHOW THE BULDING TODAY. AND # 3

72   FOR THE BELDING YASTERDAY

73   Partner: hoooh.... I was thinking that the number 3 was showing bulding of poor

74   and rich people

75   Ajwad: HE U MAM WHERE ARE U

76   Ajwad: ????????????//////

77   Partner: anyway

78   Ajwad: WHAT?

79   Partner: We don't talk about architecture

80   Partner: so we don't really need this picture

81   Ajwad: WHY?

82   Partner: because our topic is about people

83   Ajwad: OK

84   Partner: Maybe we can say that a lot of foreign people who come in the USA live

85   in big city

86   Partner: I think that there is a few foreign people in Kansas

87   Partner: People prefer going in California, NY, Florida, Texas, Chicago

88   Ajwad: YES U GARED

89   Ajwad: BUT POEPEL ALSO PRERER TO TAMPA ALSO

90   Ajwad: DONT MISS THAT

91   Partner: we finish

92   Partner: we prefer tampa

       The overall patterns that I identified when analyzing the discussion of Ajwad and his partner were collaborative. They both recognized each other's contribution to the task and were able to move through the discussion resolving misunderstanding and constructing a common view on the topic using the pictures provided to support the discussion. During the discussion, they were able to engage with each other's ideas in the process of interpreting the pictures and sharing ideas related to the task topic.

       The overall tone of their discussion was light and relaxed. However, I noticed that this tone was set by the partner rather than by Ajwad. At certain moments during the discussion, especially when feeling insecure, Ajwad showed hints of irritability. In order to express his lack of understanding of his partner's reasoning he asked questions such as "*what are u doing? Can u tell me*" (line 57) and "*HE U MAM WHERE ARE U*" and then posted multiple question marks and backward slashes (lines 75 and 76). At some point of the discussion (line 36), after his partner indicated misunderstanding, he switched to caps locked font, which I interpreted to be a strategy to stress his opinion and attempt to make it clearer (similar to a louder, more articulated speech in a face-to-face interaction). He used caps lock in the beginning of the discussion as well but switched to a normal font after two short postings (lines 10 and 12). In contrast, his partner was able to preserve a calm and positive attitude during the discussion. She used emoticon of a smiley face to stress her agreement with Ajwad (line 44), implicitly invited the partner to interpret the pictures under discussion rather than simply state their topics and then supported her statement with an emoticon of a smiley face to indicate her friendly tone (lines 68 and

69). In my opinion, her positive attitude helped the discussion to move on in a productive and collaborative manner.

Although both partners contributed to the discussion of the topic, Ajwad's partner was the one who would perform more moves aiming to organize and direct the discussion. I found seven such postings (lines 6, 13, 19, 25, 46-47, 50, 79). She was also the one to initiate and conclude the task. Thus, although taking a collaborative stand during the discussion, most of the time Ajwad followed his partner's lead. He unsuccessfully attempted to direct the discussion to a more general chat on the topic (lines 16 and 34); he successfully initiated the paragraph organization discussion which helped the dyad to specify the overall theme of their paragraph (lines 48-49).

Despite the leading role of his partner, Ajwad was able to make a significant contribution to the discussion. Both partners made a similar number of turns during the chat (Ajwad 39, partner 43). Further, Ajwad contributed a slightly higher number of content idea units addressing specifically the task content: 20 out of the total 50 idea units that he composed during the discussion. His partner posted 19 content idea units out of 57 total idea units. The SCMC Paragraph Comparison Matrix 5.5: Ajwad included in the next section presents their chat with idea unit segmentation.

The dynamics of this SCMC interaction was similar to the dynamics of the other SCMC interactions observed during the treatment and described in Chapter IV. Most of the postings of Ajawad and his partner were short, containing mainly one or two idea units per posting; the highest number of idea units in one posting was four.

The paragraph: intertextual connections. In his post-treatment paragraph, Ajwad showed negative gain as measured by the overall difference of the pulled pre- and post-

treatment z-scores. He improved on two of the eight text analysis criteria used in the study: the amount of information present in a single focus (measured by mean length of idea units) and lexical information per clause (measured through lexical density analysis). He had the lowest gain of the students who participated in the SCMC treatment group.

The intertextual connections of Ajwad's paragraph and the pre-writing chat on a lexical level as measured by the ratio of matching distinct lexical items of his paragraph and the pre-writing discussion was 20.87. Comparing it to the mean ratio of the SCMC treatment group –
26.31, it was low. Further, I present my analysis of the intertextual connections of Ajwad's paragraph and his pre-writing discussion on organizational and idea unit level.

Ajwad proposed an organization sequence of discussed ideas during the pre-writing chat: (1) history of immigration, (2) homes, and (3) advantages for immigrants (Pre-writing Discussion SCMC Log 5.5: Ajwad and Partner, lines 46-47). He was less certain about the second part of the paragraph "homes" which he indicated with a question mark. Further in the discussion, the partners agreed to abandon the idea of different types of houses and concentrate their paragraphs on people. This suggestion was implemented in Ajwad's paragraph organization. In his paragraph, he developed the topics of immigration history and the advantages of living in the United States. The general topic of "homes," was replaced with a presentation of population diversity and the reasons for this diversity, which were suggested by his partner (IU13** and IU 31**). Thus, I would suggest that, in his post-treatment writing, Ajwad followed the paragraph organization suggestions shared during the discussion demonstrating a considerable intertextual connection of the pre-writing task and the post-treatment paragraph on

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organizational level. Following is a comparison matrix of Ajwad's and his partner's pre-writing discussion and Ajwad's paragraph with analysis comments.

SCMC Matrix 5.5

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: youhouuuuuuuuuuu IU1** Partner: Is someone here? IU2**	Ajwad: hi IU1* Ajwad: her i am IU2*	In 1815, the people in the United States was 8.4 millions, IU1- IU21* & IU33**[New IU, development of own topic and partner's topic] after that many people from all of the word immigrants in the late of 1800s and 1900s, IU2- 24*- IU16**
Partner: haaaaaaaaaa IU3** Partner: we will discuss about ideas first IU4**	Ajwad: ok IU3*	[New IU, development of own topic and partner's topic] they can found better life in USA, IU3 – IU18* and IU19* [New IU, summary of own topic]
Partner: I think IU5** that we have to talk about ethnical diversity, obesity, caractere, way of life IU6**	Ajwad: O.K IU4*	more chance to get a job, better life and study. IU4- IU18* [Own, rephrased – takes part of
Partner: do you have other ideas? IU7**	Ajwad: NO IT IS OK IU5*	

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: ok.... IU8** so we can go on IU9** Partner: what about the paragraph organization? IU10**		own IU and develops into a new, use of synonyms] All of those ideas may be able to found in every where, IU5 [New] but the
	Ajwad: defrent poeple in the same blase coming from all the wored IU6* Ajwad: we will talk about Amireca in general IU7*	different is more chance and equal opportunity. IU6 [New] During the last hundred years, the United States totally
Partner: ???? IU11**		change, IU7 [New, development of own topic] the good system was billed, IU8 [New]
	Ajwad: what is going on? IU8*	
Partner: we have to choose a topic sentance IU12**		the building improved, IU9 – IU40* [New, based on own topic] the population increase
	Ajwad: ok IU9*	more then 32 times, IU10-

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: for example: People in America are very different IU13**		IU21* [New, development of own topic] there are different type of people IU11-IU13** [Partner's rephrased, syntactic changes] but they dialing with them same. IU12 [New]
	Ajwad: : what is your sudgesting IU10*	
	Ajwad: i like this idia IU11*	
	Ajwad: ok then we write about the resons IU12*	The United states have around 280,000,000, IU13 - IU33** [New, partner's topic developed] and no way
Partner: let's choose a main idea IU14**		
Partner: ok IU15**		
Partner: immigration IU16**		
Partner: porety vs. rich IU17**	Ajwad: yes IU13*	to be the people have the same
(rich are often white IU18**	Ajwad: why the peopel come to usa IU14*	behaviors or same cutler, IU14 –
and poors are often black or come from the minorities) IU19**		IU13** [New, develops partner's topic] how come if all states have different whether environments,

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
	Ajwad: what the advanteg they well get fron usa IU15*	IU15 [New] and the distance from the south to the north or east to the
Partner: yes IU20**		west it take like more then 5 days by car. IU16 [New]The United
	Ajwad: but i like to spike in general IU16*	state now is the force in this earth,
Partner: to spike? IU21**		IU17 [New] and it has very strong
what does it mean? IU22**		economy, IU18 [New] it has very
	Ajwad: the peopel coming to USA FROM ALL THE WORD, IU17*	huge building. IU19- IU40* [New, based on own topic] There are
	CUS THEY GET GOOD OFFER IN WORK, STUDY, IU18*	many people in the word like in his
	GO TO HOSPITEL IU19*	dreams to be American citizen
	Ajwad: somthing like that IU20*	IU20 [New] to get some of life

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: and for the american dream IU23**		
Partner: we can atalk about what IU24**		
we see in our culture class IU25**		
	Ajwad: we can also start with the history of immegrint IU21*	
	Ajwad: AS WE STUDY IN BILL CLASS IU22*	
Partner YES!!!!! IU26**		
Partner :) IU27**		
	Ajwad: SO OUR PRAGRAPH WELL BE IU23*	

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: hoooooooo it's just a brainstorming today! IU28** great! we don't have to write a paragraph IU29**		
	Ajwad: 1. HISTORY OF IMMEGRINT , IU24* 2. WHOME? IU25* 3. WHAT IS THE ADVANTEG FRO IMMIGRINT IU26*	
Partner: so actually.... we can talk about immigration. Ameri IU30** Partner: why is the contry so diversified IU31**		
	Ajwad: diversified? IU27*	
Partner: do you understand all teh pictures? IU32		

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
	Ajwad: YES IU28*	
Partner: one is about the number of people, IU33** another is about immigration, IU34** an other one shows rich's and poor's houses IU35**		
	Ajwad: what are u doing? IU29* can u tell me IU30*	
Partner: but I don't figure out the 3 others IU36** Partner: I'm chatting! IU37**		
	Ajwad: i think #3 ABOUT IU31* Ajwad: THE OLD HUES IU32*	

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: the old hues? IU38**		
	Ajwad: AND NUMBER 4 ABOUT UNITED OF PEOPEL IN USA, IU33* CUSE THEY WAS FROM DEFRINT COUNTRY IU34* AND NOW THEY FROM USA IU35* Ajwad: #5 ABUT THE BILDING TODAY	
Partner: the fifth one is NY city IU39**	IU36*	
Partner: yes I can see the pictures! IU 40**	Ajwad: MAP FOR USA TODAY IU37*	
thank you! IU41**		
Partner ;) IU42**		
Partner: But I try to understand the rapport with the People in USA IU43**		

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
	Ajwad: YES IU38* BUT I THINK IU39* IT IS TO SHOW THE BULDING TODAY. IU40*AND # 3 FOR THE BELDING YASTERDAY IU41*	
Partner: hoooh.... IU44** I was thinking IU45** that the number 3 was showing bulding of poor and rich people IU46**		
	Ajwad: HE U MAM IU42* WHERE ARE U IU43* Ajwad: ????????????////// IU44*	
Partner: anyway IU47		
	Ajwad: WHAT? IU45*	

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
Partner: We don't talk about architecture IU48**		
	Ajwad: WHY? IU46*	
Partner: because our topic is about people IU50**		
	Ajwad: OK IU47*	
Partner: Maybe we can say IU51**		
that a lot of foreign people who come in the USA		
live in big city IU52**		
Partner: I think IU53**		
that there is a few foreign people in Kansas IU54**		
Partner: People prefer going in California, NY,		
Florida, Texas, Chicago IU55**		

SCMC Matrix 5.5 (Continued)

Paragraph Comparison: Ajwad

Partner's Postings (by Idea Unit)	Ajwad's Postings (by Idea Unit)	Ajwad's Paragraph (by Idea Unit)
	Ajwad: YES U GARED IU48*	
	Ajwad: BUT POEPEL ALSO PRERER TO TAMPA ALSO <u>IU49</u>*	
	Ajwad: DONT MISS THAT IU50*	
Partner: we finish. IU56**		
Partner: we prefer tampa! IU57**		

Coding scheme:

1. <u>IU underlined – content idea unit</u>

2. <mark style="background:yellow">Yellow Highlight Color – new idea unit</mark>

3. <mark style="background:grey">Grey Highlight Color – own idea unit</mark>

4. <mark style="background:cyan">Blue Highlight Color – partner's idea unit</mark>

In his post-treatment paragraph, Ajwad composed a total of 21 idea units. He incorporated one rephrased own idea unit and one partner's rephrased idea unit, which constituted 9.52% of his paragraph. The strategies he used to rephrase these idea units were borrowing an idea unit from the discussion and rephrasing it through the application of synonyms and syntactic changes. Idea unit 4 ("*more chance to get a job, better life and study*") was based on his discussion idea unit 18* (*"CUS THEY GET GOOD OFFER IN WORK, STUDY"*). When borrowing partner's idea unit (IU13**) from the discussion, he made syntactic changes replacing the verb "*to be*" with the existential predicate "*there are*" and removing the conjunction "*because*"; idea unit 11 ("*there are different type of people*") was based on partner's idea unit 13 ("*People in America are very different*").

However, most of the idea units he composed in the paragraph were new. Out of a total of 21 idea units in his post-treatment paragraph, 19 idea units were new. These new idea units were either based on topics discussed during the pre-writing stage and showed a low intertextuality on an idea unit level, or they further developed the topic of the paragraph without a direct connection with the discussion; thus, demonstrating no intertextual connections with the pre-writing discussion. He developed nine low-intertextuality idea units: five based on topics suggested by him (IU3, IU9, and IU10), two on topics suggested by his partner (IU13 and IU14), and two developed based on a combination of his and his partner's topics (IU1 and IU2). For example, in his paragraph idea unit 7 ("*During the last hundred years, the United States totally change*"), he composed a new idea unit developing the topic of history of immigration suggested in his idea unit 21 in the pre-writing discussion ("*we can also start with the history of immegrint*"). None of these idea units had a direct connection with specific idea units in

the discussion, but rather they served to develop a topic initially specified in the discussion presenting them in the overall context of his paragraph and adding facts such as statistics.

Ajwad developed most of his paragraph idea units as a continuation of the overall topic of the paragraph. I did not find any direct intertextual connections between 10 of the paragraph idea units and any of the specific idea units from the discussion (IU 5, IU6, IU8, IU12, IU15, IU16, IU17, IU18, IU20, and IU21). For example, in idea units 5 and 6 he compared the availability of chances for better life and opportunities in other countries with the United States, a topic related to the overall theme but not specifically addressed in the discussion. He wrote: "*All of those ideas may be able to found in every where,* [IU5] *but the different is more chance and equal opportunity*" [IU6]. He used these newly composed idea units to either connect idea units based on discussion and develop a topic related to them (IU5, IU6, IU8, and IU12) or to incorporate a topic related to the theme of the paragraph as he did with the idea units that concluded his paragraph (IU15, IU16, IU17, IU18, IU20, and IU21). (Table 5.8 presents the types and the number of idea units in Ajwad's paragraph).

Table 5.8

Paragraph idea units: Ajwad

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	0	0	1	1	0	0	0	2	4	3	10	21
Paragraph %	0%	0%	4.76%	4.76%	0%	0%	0%	9.52%	19.05%	14.29%	47.62%	100%

Criteria Coding Scheme:

1. Partner's verbatim

2. Own verbatim

3. Partner's rephrased

4. Own rephrased

5. New based on partner's idea unit

6. New based on own idea unit

7. New based on combination of partner's and own idea units

8. New development or interpretation of partner's topic

9. New development of own topic

10. New development of own and partner's topic

11. New – no traceable connections with pre-writing discussion

Intertextual connections: conclusions. The intertextuality of Ajwad's paragraph on a lexical level was low. This was influenced both by the nature of the language generated during the SCMC discussion as well as the high number of paragraph idea units that had low-level intertextual or no intertextual connections with the discussion. After the analysis of the intertextual connections of Ajwad's paragraph and his pre-writing discussion with regards to intertextuality on organizational level, it seems that he considered both his and his partner's suggestions for paragraph organization and topics to be developed in the paragraph. Thus, the organization of the paragraph was influenced both by his and his partner's suggestions. The use of idea units from the discussion was rather limited: Ajwad borrowed only two idea units from the discussion and rephrased those using synonyms and syntactic modifications.

Over half of the idea units in Ajwad's paragraph were not connected with any of the idea units from the pre-writing discussion. They were related to topics from the pre-writing discussion, rather than to specific idea units. Most of the pre-writing discussion topics that he developed were topics that he proposed; however, he also considered his partner's suggestions. I would attribute this trend to the nature of the language produced during the SCMC pre-writing discussion which contained incomplete sentences or sentences that aimed to address the partner in a discussion discourse while conveying a specific idea related to the discussion topic. In addition, the highest number of idea units in Ajwad's paragraph was newly composed idea units that further developed the overall topic under discussion. These newly composed idea units were used either as a connection and a development of the idea units that were composed based on the discussion or as a conclusion of the theme of the paragraph.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

Ajwad engaged in a collaborative pre-writing discussion with his partner. However, I found that the collaborative tone of the discussion as well as discussion direction was mostly set by Ajwad's partner. She was the one to suggest most of the topics to be discussed during the chat sessions. Although Ajwad followed his partner's lead, he performed as an equal peer during the discussion posting a similar number of turns, contributing a slightly higher number of content idea units, and successfully initiating the discussion of paragraph organization.

How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?

Ajwad wrote his paragraph considering the contributions made by him and his partner during the pre-writing discussion. However, the intertextuality of Ajwad's paragraph on a lexical level was low. This could be attributed to the nature of the language generated during the SCMC discussion as well as the high number of idea units of low-level or no intertextual connections with the discussion. The organization of the paragraph was influenced both by his and his partner's suggestions. The use of idea units from the discussion was rather limited: most of the idea units composed in the paragraph were of low-level intertextuality or revealed no intertextual connections with the pre-writing discussion.

Case Study Six: Kamil

 Kamil's background. Kamil was a 19-year-old student from Kuwait. He started his college education in Kuwait majoring in finance. The Spring semester of 2006 was his first semester at the ELI. During the semester, I observed the Writing III face-to-face classes of the section in which Kamil was enrolled as well as the computer laboratory classes.

 Based on my class observation notes, during class interaction, Kamil was one of the passive students who would not participate in class discussion unless the teacher addressed him specifically. There were times when he was not able to answer the teacher's question because he was not following class discussion. Kamil's participation was more focused when he worked in a small group. Once, the triad in which Kamil participated volunteered to present to the class the outcomes of their collaborative work. However, I would say that the overall trend in his class interaction was rather passive. This trend was explained to a certain extent by Kamil's answer to my interview question about class organization in his country. He said: *"It* [the classes in his country] *was really very good organized , yeah some times my teacher lecture duing in my class, actually I like the system in my class and I hate when some one try to bother the student."* From this answer it appeared that Kamil preferred listening to his teacher rather than actively participating in class discussion. The full text of the interview is provided in Appendix 5.10.

 During the computer laboratory classes, I did not notice Kamil to have any technical problems. In fact, according to Kamil's interview answers, he felt very comfortable with computers and preferred completing tasks using computers*: "Actually*

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the computer is really important for our life and it`s very easy to done the works with it that why i prefer to work by computer because i get used to work with it in my high school and in my life .Also the computer chek my spelling mistake . finnaly i prefer the computer because we learn more with it." Thus, in addition to being an experienced computer user, Kamil appreciated the use of computers for learning purposes. When asked if he had used computer mediated communication in the past, Kamil provided an affirmative answer without adding details. Based on the SCMC training tasks as well as on his treatment interaction, I could conclude that he had some experience with chat: he used emoticon symbols in his discussion as well as common chat abbreviations.

Kamil's attitude towards writing, shared during the interview, was rather negative. When I asked him about the most enjoyable aspect of writing in English, he stated: *"Actually I write anything cause it makes me bored ,But I enjoyable just when I write my name in English."* Nevertheless, he identified extensive practice as a strategy for improving his writing in English: *"I think We must write a lot to improve writing skills."* In addition, in the interview, Kamil showed awareness of the connection of writing skills to reading.

The treatment interaction. During the treatment interaction, Kamil demonstrated passive dyadic patterns while his partner served as a dominant participant. In fact, their discussion was rather short. It included 10 turns, five made by Kamil and five by his partner, while the average number of turns in the SCMC treatment group was 46.46. The total number of idea units used by Kamil in his discussion was eight. Only three of them were content idea units; in other words, they addressed the topic of the pre-writing task. The contribution of Kamil's partner to the topic was more substantial. He shared his ideas

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about the pictures and topic under discussion in seven content idea units out of nine. The

full log of Kamil's and his partner's SCMC pre-writing discussion is presented next in

SCMC Log 5.6.

Log 5.6

SCMC Pre-writing Discussion: Kamil and Partner

1   Partner: hi

2   Kamil: y whats up

3   Kamil: well. i think the first picuter tell us there are many people wanna moved

4   from them countrey or travel to somewhere

5   Partner: in the firs picture it's seem that the populatin of usa incease

6   Kamil: yeah maybe who`s know :)

7   Partner: the secound picture it's show the amazing desing for the buldings and how

8   it's organize

9   Partner: the 4th picture it shows that in USA there are diffirent nationalities which

10   cause diffirents culture.

11   Partner: the final picture shows the map of USA and the impotant city there.

12   Kamil: hey whats up

13   Kamil: first of all i`m disagree :P foe every thing

     As it is evident from this log, Kamil initiated the task posting his interpretation of

the first picture. His posting was followed by his partner; however, Kamil became

disengaged from the task-completion, and the rest of his postings were not related to the

task and were not collaborative in nature. His partner, after completing the posting of his

own ideas about the pictures related to the task, also disengaged by leaving the

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discussion. For the rest of the treatment session, they did not post anything more and attempted to talk to each other face-to-face.

In the interview, Kamil stated that the task was generally fine but not interesting to him: "*It* [the task] *was ok. Little boring.*" Thus, I would qualify Kamil's motivation and engagement in the task completion as low. When sharing his perceptions and experiences related to the task, Kamil also indicated that he considered his partner's postings in his paragraph only if he agreed with them.

The paragraph: inertextual connections. Kamil's post-treatment writing showed overall negative improvement as compared to his pre-treatment writing. In his post-treatment writing, he had a higher score only on two of the criteria used for text analysis: vocabulary complexity, measured by analyzing the frequency of the unique words used and ideas presentation and development. His overall gains, as measured by the difference between the pulled z-scores of post-treatment and pre-treatment writing, were -0.636001647 which was the second lowest pulled score in the SCMC treatment group.

On the lexical level, the intertextual connections of Kamil's paragraph and the pre-writing discussion were low. The ratio of the matching distinct lexical items between the paragraph and the discussion was 18.92, whereas the average for the SCMC treatment group was 26.31. Below, the intertextual connections of Kamil's text and the pre-writing discussion of the dyad in which he participated on the idea unit level are discussed.

Kamil and his partner addressed limited aspects of the task. His partner outlined briefly his opinion about the pictures which were part of the task, and Kamil posted only one message directly related to the task. They did not discuss the organization of the future paragraph nor did they indicate their intention of planning for writing the

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paragraph during the interaction. In addition, the ordering of idea units in Kamil's

paragraph was different from the order of the ideas posted in the discussion. Following is

the comparison matrix of Kamil's pre-writing interaction with his partner and his

paragraph along with analysis notes (SCMC Paragraph Comparison Matrix 5.6: Kamil).

SCMC Matrix 5.6

Paragraph Comparison: Kamil

Partner's Ideas (by ID or close)	Kamil's Ideas (by ID or close)	Kamil's Paragraph Ideas (by ID or close)
Partner: hi IU1**		Actually the United States has high population and immigration. IU1 – IU3*&4* [New - develops own topic, combines two IU] There are many reasons for this high immigration IU2[New text organization] First of all people move to The United States IU3 – IU4*[New – based on own IU] because they need good jobs, good salary IU4 [New] or they don't feel comfortable where they are. IU5 [New] Also the United States has great and beautiful houses and wonderful places IU6 [New – development of partner's IU3**] like the high building in New York, Las Vegas, and Chicago. IU7[New]
	Kamil: y whats up IU1*	
	Kamil: well. i think the first picuter tell us IU2* there are many people IU3* wanna moved from them countrey IU4* or travel to somewhere IU5*	

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SCMC Matrix 5.6 (Continued)

Paragraph Comparison: Kamil

Partner's Ideas (by ID or close)	Kamil's Ideas (by ID or close)	Kamil's Paragraph Ideas (by ID or close)
Partner: in the firs picture it's seem that the populatin of usa incease IU2**	Kamil: yeah maybe who`s know IU6*	In Fact The immigration in United States come from many countries IU8 - IU6**[New – based on partner's rephrased] like Spain, France, Korea, Japan, And Medal East IU9 [New] Finally actually the people in The united states are so friendly and polite IU10 [New] that why many people moved to united states IU11 - IU3* – IU4*[New – based on own, extended repetition of paragraph idea unit] Also they like to live there IU12[New] to find a good life with this people IU13 [New]
Partner: the secound picture it's show the amazing desing for the buldings IU3** and how it's organize IU4**		
Partner: the 4th picture it shows IU5** that in USA there are diffirent nationalities IU6** which cause diffirents culture.IU7**		
Partner: the final picture shows the map of USA IU8**		
and the impotant city there.IU9**		

SCMC Matrix 5.6 (Continued)

Paragraph Comparison: Kamil

Partner's Ideas (by ID or close)	Kamil's Ideas (by ID or close)	Kamil's Paragraph Ideas (by ID or close)
	Kamil: hey whats up IU7*	
	Kamil: first of all i`m disagree :P foe every thing IU8*	

Coding scheme:

1. IU underlined – content idea unit

2. Yellow Highlight Color – new idea unit

3. Grey Highlight Color – own idea unit

4. Highlight Color – partner's idea unit

As it is evident from the Matrix presented above, all of the idea units Kamil composed were new – 13 out of a total of 13. Three of the new idea units (IU 1, IU3, and IU11) developed own topic addressed in Kamil's discussion idea unit (IU4*). Idea unit 1 ("*Actually the United States has high population and immigration*" and idea unit 3 ("*…First of all people move to The United States* ") were based on the idea about immigration expressed in idea unit 4* and were of medium-level of intertextuality. Further, one more of the new idea units (IU11) was related to the same discussion idea unit but, unlike in the pre-writing discussion, was used to show a result; thus, I considered this idea unit to be of a low-level of intertextuality.

In two of his paragraph idea units, Kamil developed a topic suggested by his partner. In idea unit 6 ("*Also the United States has great and beautiful houses and wonderful places*"), he addressed the topic of building design suggested by his partner in idea unit 3** ("*the secound picture it's show the amazing desing for the buildings*"). I would suggest that this idea unit had a low-level intertextual connection with the pre-writing discussion. He based his idea unit 8 ("*In Fact The immigration in United States come from many countries*") on the topic suggested by his partner in idea unit 6** ("*that in USA there are diffirent nationalities*"); thus, this idea unit showed an intertextuality of a medium level.

Further, Kamil composed eight idea units that had no intertextual connections with the pre-writing discussion. He added one new idea unit (IU2) for paragraph organization purposes. In four of the new idea units in the paragraph (IUI4, IU5, IU7 and IU9), he provided support to the previous idea units giving specific examples which were not discussed during the pre-writing interaction. In three of the idea units (IU10, IU12,

and IU13) he addressed topics that were not directly discussed during the pre-writing

stage. Table 5.9 presents the types and the number of idea units in Kamil's paragraph.

Table 5.9

Paragraph idea units: Kamil

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	0	0	0	0	1	2	0	1	1	0	8	13
Paragraph %	0%	0%	0%	0%	7.69%	15.38%	0%	7.69%	7.69%	0%	61.55%	100%

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

Intertextual connections: conclusions. Based on the analysis of intertextual connections of Kamil's text and his pre-writing discussion, I would suggest that these connections were very weak on the lexical level and non-existent on the organizational level. These weak connections were further confirmed on an idea unit level. Kamil attempted to compose his paragraph based on his own ideas from the discussion, which were limited due to his superficial and inadequate participation in the discussion, and addressed only two of the topics proposed by the partner. The strategy he applied when using the pre-writing discussion was to address a topic presented in one or two idea units in the discussion, and compose new idea units based on these topics; thus, the limited intertextual connections were of medium and low levels of intertextuality. Most of the idea units which Kamil composed in his paragraph were new idea units with no intertextual connections with the pre-writing discussion.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

During the pre-writing discussion, Kamil demonstrated a passive dyadic interaction trend. He expressed disagreement and disengaged early from the discussion. This manner of task completion might be related to his low motivation and lack of interest in writing, expressed in his interview answers.

How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?

The intertextuality of Kamil's paragraph as related to his pre-writing discussion was low on the lexical level and non-existent in terms of organization. The intertextuality

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on an idea unit level was also low which could be a direct result of Kamil's overall lack of interest into the pre-writing task and his early disengagement. Thus, he and his partner failed to develop a substantial amount of content idea units related to the discussed topic which could have been used during the composition of the post-treatment paragraph.

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SCMC Actors, Low Gains: Comparison

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Participants' Backgrounds

Ajwad and Kamil were the students who showed the least gain in their post-treatment paragraphs. There was age difference between the two actors: Ajwad was older than Kamil. In addition, they had different educational background: Ajwad had a university degree while Kamil just started his college studies. Their perception of writing was also different. Ajwad stressed that writing was important for him because it was an important means of communication of his own ideas to other people, while Kamil expressed his negative attitude to writing, qualifying writing as a boring task. Both were experienced computer users who valued and enjoyed using computers in their everyday life. However, there was no evidence that they had used computer-mediated communication for educational tasks prior to the semester in which the study was conducted.

Pre-writing Interaction

The participation of each actor in the interaction task was not similar. While Ajwad was a collaborative participant in the chat discussion and engaged actively in the task, Kamil was a passive participant who contributed very little to the discussion and disengaged early from the task. Additionally, their attitude towards the task was different. Ajwad expressed a positive attitude, appreciating the opportunity to exchange ideas with

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his partner. Kamil, on the other hand, stated that the task was boring for him, an attitude which he also demonstrated in his limited engagement in the pre-writing task. As a result, the pre-writing interactions of these two actors differed. Ajwad and his partner had an extensive discussion in which they addressed multiple aspects of the assigned topic as well as the paragraph organization. Due to Kamil's lack of motivation and early disengagement, the interaction between him and his partner resulted in few ideas being shared, most of them by his partner. These differences were reflected in the number of idea units which were directly related to the task (content idea units): Ajwad composed 20 content idea units, while Kamil composed only three.

Post-treatment Gains and Intertextual Connections

In their post-treatment paragraphs, Ajwad and Kamil showed gains on two of the eight criteria used for text analysis. Both improved the lexical information per clause (measured through lexical density analysis). In addition, Ajwad improved the quantity of overall information present (measured by the number of idea units), while Kamil showed gains on paragraph presentation and development. However, the overall gain of their post-treatment paragraphs was negative, meaning that they regressed as measured with the cumulative z-scores.

The number of the idea units composed in the paragraph was considerably higher in Ajwad's paragraph (21), while Kamil composed 13 idea units. The intertextual connections were limited on the lexical level as well as on the idea unit level but differed on the organizational level. The ratio of matching distinct lexical items in the paragraph and the discussion was lower than the average SCMC treatment group ratio. Kamil's paragraph did not reveal any intertextual connections on the organizational level while

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Ajwad considered the pre-writing discussion when organizing his post-treatment paragraph.

The intertextuality analysis on an idea unit level revealed some similarities between the two actors. Both Ajwad and Kamil attempted to incorporate rephrased partner's and own idea units from the pre-writing discussion, but these idea units were limited in number and were mainly of medium or low level of intertextuality. In addition, both of them composed a considerable number of idea units with no intertextual connection to the pre-writing discussion In other words, they developed topics not addressed in the discussion. Thus, the majority of the idea units they composed in their paragraphs were new.

However, there were some differences as well. In Kamil's case, in addition to his negative attitude to writing, the limited development of the discussion could be a factor that prevented him from using ideas discussed during the pre-writing stage. His limited interaction could be attributed to his view of writing as a boring task as well as of learning as a passive experience. I would suggest that he failed to involve himself actively in the discussion in a text-based environment due to these reasons. Ajwad's discussion was much more interactive and collaborative in nature. This was evident in the way he incorporated ideas units from the pre-writing discussion which included his own idea units, his partner's idea units as well as a combination of own and partner's idea units.

Based on this comparison, I suggest that the two actors, who demonstrated the lowest gains in their post-treatment paragraphs, had different levels of engagement in the pre-writing task. They also demonstrated different patterns of dyadic interaction. This

might have affected the quantity of their writing. Ajwad, as compared to Kamil, composed a paragraph with a higher number of idea units. However, they both composed mainly new idea units in their paragraph, part of which resulted in low intertextuality on the lexical and idea unit levels. Ajwad's paragraph revealed intertextual connections with the pre-writing discussion on the organizational level.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

The two low-gain participants engaged in a different way in the pre-writing interaction using SCMC as a mode of communication: one of the actors was a passive and the other was a collaborative peer. Although a variety of factors might have influenced these different patterns of dyadic interaction, I would suggest that their attitude towards writing in general, and specifically towards the pre-writing task, influenced these patterns.

How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?

The manner in which Kamil and Ajwad used their pre-writing SCMC exchange was different and corresponded with their patterns of interaction which they demonstrated during the completion of the pre-writing task. In his post-treatment paragraph, Kamil demonstrated limited consideration of his partner's contribution. On the other hand, Ajwad was able to incorporate his ideas, his partner's ideas and a combination of his and his partner's ideas into the paragraph. However, both Kamil's and Ajwad's paragraphs were loosely connected to their pre-writing discussion when

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intertextuality was approached on the lexical and idea unit levels. They composed a considerable number of new idea units by either developing topics from the pre-writing discussion or by composing idea units which conveyed their opinion on the overall topic of the paragraph and not discussed during the pre-writing interaction. Ajwad was more able to build strong intertextual connections in terms of organization, while on this level, Kamil's paragraph and discussion showed no intertextuality at all. This difference was related to the manner in which the two actors were involved in the pre-writing discussion.

Case Study Seven: Kang

Kang's background. Kang was a 24-year-old student from Korea. He was studying in a Korean university in order to obtain an undergarduate degree in mechanical engineering and interrupted his studies in order to come to the United States. Kang was a part of a large group of Korean students who came to the ELI for six weeks to improve their English for academic purposes. This group was treated in the same way as the regular students at the ELI; in other words, in the beginning of the semester, their language proficiency was tested for placement purposes. Based on the outcomes of the placement test, they were assigned to the appropriate level and participated in the same classes as the other students.

One of Kang's goals related to his study of English, as he indicated in the ACMC interview, was to learn English and obtain acceptable Test of English for International Communication (TOEIC) scores. This he related to his future career as an engineer. The educational environment to which Kang was exposed in Korea, based on his own report provided in the ACMC interview, was mainly teacher-centered: "*In korea, the classes is usually lecture. It have a merit that a student can learn many content for a short time. But*

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because of that many krean student have a passive trend. I think it is a problem." The full text of the interview is available in Appendix 17.

Kang expressed insecurity in his writing skills. In his answer to the writing teacher's welcome message in the beginning of the semester he wrote: "*I would like to learn the skill of writing and word orders and useful expression..etc but, My english is not good and I'm not familliar with writing. so, I need your help.^^*'*" In addition, in his interview he shared that his most serious difficulty when writing in English was the attempt to translate from Korean. In the interview Kang also showed his awareness of the importance of practice for developing writing skills and that there was a connection between writing skills development and reading: "*We should read many kinds of English book. And Trying to writting somthing english at all time*." Further, Kang also expressed his awareness of the importance of writing as a communication medium. When identifying the most enjoyable aspect of writing in English for him, he stated that it was when people understood his writing.

Unfortunately, due to the early departure to Korea, Kang was unable to provide me with more information with regard to his views on the CMC pre-writing discussion task and his computer experience. However, despite the lack of this information, I considered Kang as an actor in the instrumental case study. This decision was based on Kang's writing gains as measured after the completion of the treatment task: he obtained the highest gain in the SCMC treatment group on his post-treatment writing as measured by the pulled z-scores difference between the post- and pre-treatment paragraphs. The analysis of his pre-writing interactions as well as his writing, along with the other

information sources (e.g. his training pre-treatment CMC interactions) would provide sufficient information for the instrumental case study.

In order to obtain more information with regard to Kang's computer experience, I considered the SCMC training interview task which the students completed before the treatment. In this task, the students worked in dyads to interview each other about their computer experiences and opinions about the importance of computers in their everyday life. From the interview postings, it appeared that Kang was an experienced computer user. In the past, he had accessed information on the Internet, had used online banking, and played games. Based on this peer interview it appeared that Kang was also an avid computer user. When his peer asked him how he used computers, Kang answered: "[I use computers] *just 10hr in a day. computer game, browing information and so on.*" In addition, I noticed that in his interactions he used the Asian versions of smiley face emoticon "^^" along with the some chat abbreviations such as "*U*" for "*you*" and "*plz*" for "*please*" which suggested that he had some previous exposure to CMC.

The treatment interaction. Kang and his partner engaged in a collaborative pre-writing interaction in which they shared their views on the pre-writing task and brainstormed ideas related to the paragraph topic. During the interaction, they were able to create a common discussion space sharing their own understanding of the pictures and further developing each other's postings. Following is the full log of their pre-writing interaction.

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Log 5.7

SCMC Pre-writing Discussion: Kang and Partner

1   Kang: hi~ [partner's name]

2   PARTNER: HI

3   PARTNER: WE HAAVE TO DO BRAIN STORM ABOUT THE POEPLE OF

4   usa

5   Kang: ok~ I see

6   PARTNER: FIRST OF ALL THERE IS ALOT OF POEPLE IN USA,and alot of

7   immegrants ull finde Spanish,Latins,Arabs,Indeians

8   Kang: usa is very wide continent. and have a many population. differnt races.

9   Kang: right..

10   PARTNER: and from my experiance i see that the Americans so pround of thier

11   freedom

12   Kang: mm .. excellent

13   Kang: and each state has a big city.. newyork, LA, chicago...

14   PARTNER: and u know what thats freedom cause this big cities they know how to

15   respect time ,they built thier cuontry.As you can see large streets,huge

16   buldings,bridges,resorts alot of aspects

17   Kang: what is mean that " freedom cause a big city" ..?

18   Kang: If I see a third picture, we can know that many people live in big city, and

19   the others live in small town..

20   PARTNER: And they do alot of festivals to celebrate their countriy

21   PARTNER: ya and alot of of the small towns poeple go to big cities to have jops

22   and have agood career

23   Kang: ok, so I think that the main idea is "Many people in the US lived different

24   way ." different from.. different race, different district....

25   Kang: and they like freedom.. individualism..

26   PARTNER: and dont forget something very imporatnt that all these poeple come to

27   USA because the oprotinity is available here in an aother way u can make good

28   money here and own house and good jop

29   Kang: and then.. first.. People came to US because they have opportunity.

30   freedom..etc

31   and there are many population.

32   Kang: some people live in bic city.. and others live ..

33   Kang: big

34   PARTNER: so tell me have u ever been in any big city such as Sanfransisco or L.A

35   or Chicago?

36   Kang: not yet..

37   Kang: I'm plannig to NewYork tomorrow..

38   Kang: go to..

39   Kang: Do you know about big city of USA??

40   PARTNER: i went to Sanfransisco and Chikago its amazing poeple are so polite

41   and they treat u so goog and u know what attract me poeple work very hard really

42   Kang: ok.. good point.. actually I don't know exactly..

43   PARTNER: so we r done we dont have any more idea

44   PARTNER: bye see u soon

45   Kang: ok bye~ ^^

In the discussion, it seems that Kang's partner took the leading role in task initiation (line 3) and closure (lines 41-42). However, Kang was an equal peer during the discussion. He contributed new ideas and supported his partner's idea development. For example, in line 12 he proposed a new topic for discussion related to the overall topic of the task. Further, he summarized the ideas of the discussion and proposed a main idea for their paragraph (lines 22-24). He expressed high consideration of his partner's contribution. This consideration was demonstrated in several ways: (1) he expressed agreement and approval of his partner's opinion (lines 8 and 11), (2) he extended his partner's ideas from previous posting (for example, line 7), (3) he asked a question about a part of his partner's posting that was not entirely clear to him (line 16), (4) he self-corrected a misspelling to make his posting more clear (line 31), and (5) in his summary (lines 22-24, and lines 28-30) he considered his own and his partner's ideas shared during the discussion.

Kang and his partner did not address directly paragraph organization. Kang made an attempt to summarize and start ordering the outcomes of their discussion (lines 28-30), but it was not completed due to a topic change initiated by his partner. Towards the end of the discussion (lines 32-43) Kang's partner changed the chat direction to personal experiences related to the task, and Kang followed this shift. Thus, the end of their discussion was not directly related to the paragraph brainstorming.

Despite Kang's partner taking a leading role in choosing the chat direction (initiating the chat, shifting the topic of the discussion away from the task, and proposing an end of the discussion), Kang's participation was active and collaborative. Both

participants contributed almost equally to the task: Kang made 19 postings while his partner made 12. The idea units they composed during the interaction were also close in number: Kang composed 31 total idea units, while his partner composed 33. Their contribution to the discussion in terms of content idea units (in other words, idea units directly related to the topic of the pre-writing task) was also similar in number: 14 content idea units were posted by Kang and 16 by his partner. This idea unit segmentation is presented in the SCMC Paragraph Comparison Matrix 5.7: Kang, and it is further discussed in the following section in the context of the intertextual connections of the pre-writing chat and the treatment paragraph.

The treatment paragraph: intertextual connections. In his post-treatment paragraph, Kang showed improvement on five out of the eight text criteria considered in the study: (1) lexical information per clause (measured through lexical density analysis), (2) vocabulary complexity (measured by analyzing the frequency of the unique words used), (3) rhetorical soundness, (4) presentation and development of main ideas, and (5) overall language use (the last three criteria were assessed using a multiple trait rubric). He demonstrated negative gain on the other three criteria: (1) the syntactic complexity (measured by calculating the mean length of t-units), (2) the amount of information present in a single focus (measured by mean length of idea units), (3) the quantity of overall information present (measured by the number of idea units). The overall gain as measured by the difference between the pulled z-scores of post-treatment and the pre-treatment writing was 0.64492224. This was the highest gain in the SCMC treatment group. (Refer to Appendix 5.1 for the complete list of the case study participants' scores by measure.)

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The intertextual connection of Kang's post-treatment paragraph with the pre-writing discussion on a lexical level was lower than the average for the SCMC treatment group: the ratio of matching distinct lexical items of his paragraph and the pre-writing discussion was 21.43, while for the SCMC treatment group the average ratio was 26.31. Below, I present the analysis of the intertextual connections of Kang's paragraph and the pre-writing discussion on the organizational and idea unit levels.

Kang and his partner did not discuss explicitly the organization of the paragraphs they were preparing to write. Kang attempted to start this discussion; however, this attempt was underdeveloped. In his paragraph, he did not follow the order in which the ideas were shared. For example, he proposed to start the paragraph with the topic of population; however, his paragraph topic sentence developed the idea of immigration, and population came as his first supporting idea. The topics of opportunity and freedom were addressed in different postings in the pre-writing discussion, but were merged in the paragraph in two consecutive idea units. Thus, on the organizational level, no intertextual connections of his paragraph and the pre-writing discussion were detectable. The full text of the SCMC discussion and Kang's paragraph are presented further in a comparison matrix that incorporates notes on my analysis on idea unit connections.

SCMC Matrix 5.7

Paragraph Comparison: Kang

Partner's Postings (by Idea Unit)	Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
Partner: HI IU1**		Many people have come to the United State of America for 250 years IU1 [New – based on partner's IU18**, adds new details] including Europe, North America, South America, etc. IU2 [New – based on partner's idea unit IU4**] The population of America were getting more and more. IU3-IU4*, IU21* [Rephrased own, synonyms and syntax changes] It was a good chance for immigrant to immigrate, IU4-[New, develops partner's topic of immigration IU18**]
	Kang: hi~ [partenr's name] IU1*	
	Kang: ok~ I see IU2*	
	Kang: usa is very wide continent. IU3* and have a many population. differnt races.IU4*	
Partner: WE HAAVE TO DO BRAIN STORM ABOUT THE POEPLE OF usa IU2**		
Partner: FIRST OF ALL THERE IS ALOT OF POEPLE IN USA, and alot of immegrants IU3** ull finde Spanish, Latins, Arabs, Indeians IU4**		

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SCMC Matrix 5.7 (Continued)

Paragraph Comparison: Kang

Partner's Postings (by Idea Unit)	Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
	Kang: right.. IU5*	because of freedom and quality of opportunity.
Partner: and from my experiance i see IU5** that the Americans so pround of thier freedom IU6**		IU5 [New – combines partner's topic of opportunity IU19**and partner's topic of freedom IU6** and IU8**] They had to mix diverse cultures. IU6 [New – based on own
	Kang: mm .. excellent IU6* Kang: and each state has a big city.. newyork, LA, chicago...IU7*	topic from IU16* and IU17*] So, they have had a strong individualism IU7 [New develops own topic, IU18*] based on self-reliance. IU8
Partner: and u know IU7** what thats freedom IU8** cause this big cities they know how to respect time IU9** ,they built thier cuontry. IU10**		[New] Many of the American live big city, IU9-IU12*[Own – rephrased, synonyms] such as Newyork, Chicago,

SCMC Matrix 5.7 (Continued)

Paragraph Comparison: Kang

Partner's Postings (by Idea Unit)	Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
As you can see large streets,huge buldings,bridges,resorts alot of aspects IU11**		Los Angeles, Sandiego. IU10- IU7* [Own part of IU7*] There are many tall building in big city. IU11 [New – develops partner's topic, part of IU11**] The others live small town. IU12-13* [Own, verbatim, only drops the "and"]
	Kang: what is mean IU8* that " freedom cause a big city" ..? IU9*	
	Kang: If I see a third picture, IU10*	
	we can know IU11* that many people live in big city, IU12* and the others live in small town..IU13*	

SCMC Matrix 5.7 (Continued)

Paragraph Comparison: Kang

Partner's Postings (by Idea Unit)	Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
	Kang: ok, so I think IU14* that the main idea is IU15* "Many people in the US lived different way" IU16*. different from.. different race, different district....IU17*	
	Kang: and they like freedom.. individualism.. IU18*	
Partner: and dont forget something very imporatnt IU17** that all these poeple come to USA IU18** because the oprotinity is available here IU19**		
in an aother way u can make good money here IU20** and		
own house and good jop IU21**		

SCMC Matrix 5.7 (Continued)

Paragraph Comparison: Kang

Partner's Postings (by Idea Unit)	Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
	Kang: and then.. first.. People came to <u>IU19*</u> because they have opportunity. freedom..etc <u>IU20*</u> and there are many population.<u>IU21*</u>	Partner's Postings (by Idea Unit)
	Kang: some people live in bic city.. <u>IU22*</u> and others live ..<u>IU23*</u>	
Partner: so tell me IU22** have u ever been in any big city such as Sanfransisco or L.A or Chicago? IU23**		
	Kang: big IU24*	
	Kang: not yet..IU25*	

SCMC Matrix 5.7 (Continued)

Paragraph Comparison: Kang

Partner's Postings (by Idea Unit)	Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
	Kang: I'm plannig to NewYork tomorrow.. IU26*	
	Kang: go to.. IU27*	
	Kang: Do you know about big city of USA?? IU28*	
Partner: i went to Sanfransisco and Chikago IU24** its amazing IU25** poeple are so polite IU26** and they treat u so goog IU27** and u know IU28** what attract me IU29** poeple work very hard really IU30**		

SCMC Matrix 5.7 (Continued)

Paragraph Comparison: Kang

Kang's Postings (by Idea Unit)	Kang's Paragraph (by Idea Unit)
	Kang: ok.. good point.. IU29*
	actually I don't know exactly..IU30*
Partner: so we r done IU31** we dont have any more idea IU32**	
Partner: bye see u soon IU33**	
	Kang: ok bye~ ^^ IU31*

 Coding scheme:

1. IU underlined – content idea unit

2. <mark>Yellow Highlight Color – new idea unit</mark>

3. <mark>Grey Highlight Color – own idea unit</mark>

4. <mark>Blue Highlight Color – partner's idea unit</mark>

In his paragraph, Kang composed a total of 12 idea units. Eight of these idea units were new. However, there was a significant relation of idea units to the text of the pre-writing discussion. All of the paragraph text idea units but one showed a clear relation with the text. I identified five types of new idea units composed by Kang as based on their relation with the text: (1) new idea units based on partner's idea unit or topic, (2) new idea units based on own idea unit or topic, (3) new idea unit developing or combining topics discussed by partner, (4) new idea unit developing his own idea unit, and (5) new idea unit not traceable in the pre-writing interaction. Table 5.10 presents the types and number of idea units in Kang's paragraph.

Table 5.10

Paragraph idea units: Kang

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	0	1	0	3	2	1	0	3	1	0	1	12
Paragraph %	0%	8.33%	0%	25%	16.68%	8.33%	0%	25%	8.33%	0%	8.33%	100%

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

Most of the idea units composed by Kang in his paragraph showed connection with the pre-writing discussion. In 33.33% of the paragraph idea units, this connection was of a high-intertextuality level being directly traceable to specific idea units which were either borrowed verbatim or rephrased. He used one of his own idea units verbatim, dropping only a conjunction (IU12 – IU13*). He also rephrased or clipped three of his own idea units from the discussion and incorporated them into his paragraph (IU3 – IU4* and IU21*, IU9 – IU12*, and IU10 – IU7*). For example, idea unit 3 ("*In population of America were getting more and more*") was a paraphrase of two idea units (IU4* and IU21*) from the discussion ("*and have many population. different races*" and "*and there are many population*"), Kang based his paragraph idea unit rephrasing on the application of synonyms and syntactic changes.

Further, I could connect 25% of Kang's idea units to topics stated in specific idea units in the discussion; thus, they revealed a medium level of intertextuality between the discussion and the paragraph. Kang based these idea units in his paragraph on specific idea units from the discussion (IU1 –IU18**, IU2 – IU4**, IUI6 –IU16* and IU17*). For example, the first idea unit of Kang's topic sentence (IU1) was based on his partner's idea unit 18**. In his paragraph he wrote: "*Many people have come to the United State of America for 250 years*" (IU1). This idea unit was based on and further developed using a partner's idea unit (IU18**) ("*that all these people come to USA*"). Thus, more than half of Kang's paragraph idea units (58.33%) could be directly traced to the pre-writing discussion.

One-third of the idea units (33.33%) in Kang's paragraph were less directly related to the pre-writing discussion; thus, I identified their level of intertextual

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connection as low. Four idea units developed topics which had been discussed during the pre-writing stage but were not directly traceable to a specific idea unit (IU4, IU5, IU11, and IU7). For example, in paragraph idea unit 5 ("*because of freedom and quality of opportunity*"), Kang developed the topics of opportunity and freedom proposed by his partner several times during the discussion and then addressed by Kang himself. However, his paragraph idea unit was not directly related through verbatim borrowing or rephrasing of any of the several idea units from the discussion in which the topic was addressed. Finally, only one of the idea units (8.33%) in Kang's paragraph had no direct connection with the discussion (IU 12).

Intertextual connections: conclusions. When analyzing the intertextual connections of Kang's paragraph and his partner's pre-writing discussion, it appeared that they had rather weak intertextuality on the lexical level. The ratio of matching distinct lexical items of his post-treatment paragraph and the pre-writing discussion was rather low. The discussion of paragraph organization was underdeveloped; thus, the intertextual relations of the discussion and the paragraph were not present. However, when I analyzed his paragraph on an idea unit level examining the connections between the discussion and paragraph idea units, it became evident that the connections between the pre-writing discussion and the post-treatment paragraph were much stronger revealing intertextual connection at a high-, medium-, and low-levels of intertextuality.

Kang demonstrated a collaborative dyadic interaction pattern in his pre-writing discussion. This was further transferred to his paragraph writing: he was able to consider and incorporate his own and his partner's ideas from the discussion into his paragraph. He applied multiple strategies when using the pre-writing discussion. Some of these

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strategies allowed him to use language strings from the discussion: he borrowed verbatim one idea unit and rephrased three. Other strategies were directed towards the use of topics discussed in specific idea units and developing them in newly composed idea units. He used this strategy for three idea units. He developed four new idea units based on topics addressed during the discussion but with connections not directly traceable on an idea unit level. Only one idea unit was not related directly to the discussion. Thus, most of the idea units from Kang's post-treatment paragraph (91.77%) were related to the pre-writing discussion, which suggested a strong intertextual connection between the two texts on the idea unit level.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

Kang's involvement in the pre-writing discussion showed his ability to collaborate with his partner and develop the assigned discussion topic. Although his partner had a leading role at certain moments of the discussion with regards to initiation, topic shift, and discussion conclusion, Kang was able to contribute to the discussion equally providing own ideas and developing some of his partner's ideas during the discussion exchange.

How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?

The intertextuality of Kang's paragraph and the pre-writing discussion in which he participated was weak on the lexical level and non-existent on the organizational level. Kang's paragraph was influenced by the pre-writing discussion, which was evident from

the paragraph multiple idea units of high- and medium-level intertextuality. He applied various strategies when using the pre-writing discussion such as verbatim borrowing, rephrasing, using topics discussed in specific idea units and developing them in newly composed idea units. In addition, he considered his and his partner's ideas when composing his paragraph.

Case Study Eight: Sun

Sun's background. Sun was a 27-year-old student from Taiwan. She had received her undergraduate degree in the field of management information systems and worked as a software designer before coming to the United States. In her reply to the teacher's "welcome to the writing class" message, Sun shared that her reasons for learning English and becoming a more proficient writer in English were related both to personal and professional goals: "*I hope to learn how to writing mails and reports for business and personal purposes. I would like to improve my speaking and listening abilities.*"

In the ACMC interview when answering my questions about writing, Sun addressed the importance of having extensive vocabulary. She incorporated this opinion in her answer about the importance of being a good writer: "*… have a lot of vocabulary to describe what he/she want to say.*" Again, she repeated this when answering my question about the difficulties she experienced when writing in English: "*vocabulary are not enough.*" The theme of vocabulary was evident again when she shared her most enjoyable aspects of writing in English: "*I can learn more and more vocabulary and let the other know my opinion.*" This last answer also showed her awareness of writing as an important communication medium. The full text of Sun's interview is available in Appendix 5.12.

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Based on her interview answers, her academic and professional background, and my observations of Sun in the computer laboratory writing sessions, I concluded that she was an experienced computer user who used computers for various tasks. In the interview she stated: "*I am pretty comfortable when working withe computers. Actually, my job is computer software designer and I work use computers everyday. I will uncomfortable if no computers can be used anymore.*" She further extended the topic of computer use, when describing how computers were used in her previous school: "*We used computer to design software, do homework, look for information for presentation.*"

Prior to her enrolment at the ELI, Sun had used CMC extensively for various purposes that included personal communication as well as study and work related communication. In her interview, she posted a detailed message answering the question about her CMC experiences: "*yes, I used computers to communicate with other people, 1) chat with my classmates, friends, customers and my team members 2) email to my classmates, friends, customers and my team members. For business purposes and personal communication. 3) Using the online banking services, communicate with banks 4) using the online stores to buy something, like books.*" This answer suggested that Sun had used CMC for personal communication and problem solving tasks prior to the semester in which data were collected.

The treatment interaction. In her interview, Sun shared that she liked both the ACMC and SCMC training tasks. However, she did not like the design of L.E.C.S., the software used for SCMC communication. This dislike of L.E.C.S. was also shared by several other students in their interviews. Sun felt comfortable while completing the SCMC treatment pre-writing discussion. She shared with me in the interview: "*I found it*

was easy to discussion of the pictures. Nothing [was difficult] expect I must increase my

vocabulary." She perceived the activity to be helpful for her because it allowed her to

obtain more information related to the writing task and to learn about others' opinions.

However, she did not perceive CMC discussion activities to be helpful for the

development of writing skills: "*Discussion activities are like chats. I can get for*

information but it's not useful for learning how to write better." She also stated that her

typing skills were well developed; therefore, they did not impede her online pre-writing

discussion. She also shared that she used online and an electronic dictionary during the

discussion. The full log of Sun's and her partner's discussion is presented below.

SCMC Log 5.8

Pre-writing Discussion: Sun and Partner

1   Partner: hola

2   Partner: are you there ?

3   Sun: hello,nice to cu ..

4   Sun: do u have a page with six pitures??

5   Partner: nice to chat with you

6   Partner: let me read the topic

7   Partner: yes i have it

8   Sun: the pictures presenting about "the people of the US.

9   Sun: me too..

10   Partner: so !

11   Partner: what we have to talk about ...just about the people ?

12   Sun: the topice is "the people of the US. yes..

13   Partner: i think ya

14   Sun: i will write something about my pictures..

15   Partner: ok

16   Partner: but i have the same pic

17   Sun: the first one... is the areas of the US inclueds.. there are a lot of people live

18   there..

19   Sun: yes...i don't know why .. but they all have the same picture..

20   Partner: i think they mean that .. in U.S there is a lot of people not just from U.S

21   there are people from evey where in the world

22   Sun: maybe chat with the detail of the picture..

23   Partner: not the pic ..we have to write about the people in U.S

24   Sun: and do u know .. which three areas the us has ??

25   Sun: not in the pic??

26   Partner: no

27   Sun: so what should we do..chat about american people??

28   Partner: yes

29   Sun: maybe you first ...and i will follow u.

30   Partner: ok

31   Sun: sure..let's start

32   Partner: the U.S is a counry there are people from every where in the world .. so it's

33   a counry has a lot of cultures and different people and may be language

34   Sun: is true..

35   Partner: the 2nd pic about the building in the U.S ..so it showes there are a hight

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36   building in some where in U.S like New your city or in some city ..so it's different

37   from each city ..every city has a different things

38   Sun: the 3nd pic also about the house in us..people maybe will not only live in the

39   city but also live in country..

40   Sun: so 2nd , 3nd show myabe different cluture has different housing sytels..

41   Partner: ot i think it talk about the people who moved from the village to the city ..

42   sotge U.S had a village in the past but now everything changed ..so they have a

43   cities

44   Partner: what about the 3rd pic

45   Partner: the 4th

46   Sun: 3nd show myabe different cluture has different housing sytels..

47   Sun: maybe..

48   Partner: ya

49   Partner: the 4th pic

50   Sun: you will say something about 4nd one??

51   Partner: it may be mean the freedom in the U.S ..so here in people can say what

52   ever they want and they can walk in the street and judg the goverment

53   Sun: 5nd about Los Angeles is the place where has most different culture in the

54   city.

55   Partner: it's in los angelos or in New your city

56   Sun: maybe..

57   Partner: this brige in New york

58   Partner: i'm sure

59　　Partner: the last pic

60　　Sun: so always has a lot of different culture in us city.

61　　Sun: ok,thanks

62　　Partner: it's apears how bit is the U.S

63　　Sun: yes

64　　Sun: ok good job..

65　　Sun: we have done

66　　Sun: ok let's go home now...

67　　Partner: she said keep chating

68　　Partner: we can chat about something different

69　　Sun: ok sure..

70　　Sun: i like it

71　　Sun: will u study in USF ?

72　　Partner: i think yes

73　　Partner: but after 10000000000 year

74　　Partner: because i need the toefl

75　　Partner: it's too diffecult

76　　Sun: wow ... so long time

77　　Sun: rite..it's really very different..

78　　Partner: i guese

79　　Sun: but i think i can do it very well

80　　Sun: what major will u attach?

81　　Partner: for me it's too diffecult

82   Partner: they need 550

83   Partner: buisness

84   Sun: i believe that you can do well

85   Sun: business ... why?

86   Partner: i hope

87   Partner: i dont know

88   Partner: i dont have another choise

89   Sun: :)

90   Sun: good luck..it time for going home...

91   Sun: cu tomorrow

92   Sun: have a nice day

93   Partner: ok see you

   In their chat, Sun and her partner engaged in a collaborative online discussion
with equal contribution to the task completion, Sun posting 41 messages, and her partner
posting 42. Sun was the one to initiate and conclude the task discussion. In addition,
when Sun and her partner perceived that they had completed the tasks, they remained
online and continued chatting about personal plans and experiences not related to the
task. This continuation of the chat was initiated by her partner.

   During the pre-writing discussion, Sun initiated the discussion of the assigned
topic (line 4) and guided the process of task completion in several of her postings (lines 8
and 21). There was a short confusion about what exactly the task entailed which was
resolved during the SCMC interaction (lines 16-20) with Sun's guiding. In her postings,
Sun contributed to the discussion sharing her opinion about the topic and the images they

had to use in order to develop the discussion and prepare for the paragraph writing task (lines 37-38, 44, 51, 57). She also invited her partner to share his opinion about the pictures (lines 26, 48) and indicated recognition of his contribution (lines 33, 58, 60, 61). Sun was the one to indicate her perception of the task being completed (line 62) and to initiate the closure of the discussion (line 63, 87). However, when she proposed that they finish chatting (line 63), her partner stated that the teacher's suggestion was to continue with the chat even though they finished the pre-writing discussion. Sun followed her partner's suggestion, and they continued the chat about their personal plans (lines 64-90). Although Sun and her partner indicated that they perceived the discussion task to be completed, in their interaction they did not discuss the organization of the paragraph and did not address explicitly every picture from the task.

Due to the reason that the chat incorporated greetings, discussion of the task requirements, as well as non-task related chat, the content idea units composed during the pre-writing discussion were fewer than the overall number of idea units. The overall number of idea units was 112, with 54 idea units posted by Sun and 65 by her partner. However, the content idea units (in other words, the idea units directly related to the topic were 13 for Sun and 25 for her partner). The lower number of Sun's content idea units was partially a result of her more active involvement in chat organization and directing the task completion. In the following section, the chat and paragraph idea unit segmentation is presented and discussed in order to establish their intertextual connections.

The paragraph: intertextual connections. The post-treatment paragraph written by Sun showed a positive gain as compared with her pre-treatment paragraph. Sun improved

her writing on five of the proposed eight text analysis criteria: (1) the syntactic complexity (measured by calculating the mean length of t-units), (2) the amount of information present in a single focus (measured by mean length of idea units), (3) the quantity of overall information present (measured by the number of idea units), (4) vocabulary complexity (measured by analyzing the frequency of the unique words used), and (5) rhetorical soundness (the last criterion was assessed using a multiple trait rubric). The overall gain as measured by the difference between the pulled z-scores of post-treatment and the pre-treatment writing was 0.460250215. This was the second to the highest gain in the SCMC treatment group. (Refer to Appendix 5.1 for the complete list of the case study participants' z-scores by measure.)

Sun's post-treatment paragraph showed low intertextual connections with the pre-writing discussion on the lexical level. It was lower than the average for the SCMC treatment group: the ratio of matching distinct lexical items of her paragraph and the pre-writing discussion was 16.51, while for the SCMC treatment group the average ratio was 26.31. Paragraph organization was not discussed by Sun and her partner during the pre-writing interaction. Sun's paragraph did not follow the order in which the ideas were shared during the discussion. Thus, I could not establish an intertextual connection on the organizational level between the organization of the paragraph and the discussion. Below, I present the analysis of the intertextual connections of Sun's paragraph and the pre-writing discussion in which she participated on the organizational and idea unit levels. The full text of the pre-writing discussion and Sun's paragraph are presented in the following comparison matrix along with my idea unit analysis (SCMC Paragraph Comparison Matrix 5.8: Sun)

SCMC Matrix 5.8

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
Partner: hola IU1**		There are a lot of people in United States, IU1-IU8*
Partner: are you there ?IU2**		[Own – rephrased – synonyms and syntactic changes]
	Sun: hello,nice to cu .. IU1*	including United States continent, Alaska and the other
	Sun: do u have a page with six pitures??	insular area. IU2 [New] The capital of United States is
	IU2*	Washington, D.C. IU3 [New] People who live in USA
Partner: nice to chat with you IU3**		always treated the government with respect. IU4 [New
Partner: let me read the topic IU4**		- might be inspired by partner's IU45**] People in
Partner: yes i have it IU5**		United States live in cities or towns IU5-IU22* and
	Sun: the pictures presenting about "the	23* [Own – rephrased merges two IUs, syntactic and
	people of the US. IU3*	synonym changes] where the housings
	Sun: me too.. IU4*	

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
Partner: so ! IU6**		have several different styles. IU6-IU25* [Own – rephrased, IU clipped, syntactic change] Because
Partner: what we have to talk about IU7** ...just about the people? IU8**		of the culture, climate and location are different from each other. IU7 [New – based on partner's topic of diversity – IU21-25**] In Big city, the
	Sun: the topice is "the people of the US. yes.. IU5*	buildings are tall and fashion, IU8 [New, develops partner's IU28**] however the
Partner: i think ya IU9**		buildings in the towns or countries are small. IU9
	Sun: i will write something about my pictures.. IU6*	[New] There are a lot of people IU10 –
Partner: ok IU10**		
Partner: but i have the same pic IU11**		

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SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: the first one... is the areas of the US IU7* inclueds.. there are a lot of people live there..IU8* Sun: yes...i don't know why .. IU9* but they all have the same picture.. IU10*	IU15** [Partner's rephrased – clipped and NP extended with a modifier] who came from different cultures and different countries, IU11 [New – based on partner's IU 15**, 24**, 25**] and they live peace with each other. IU12 [New]They all follow the rules which established by the government with their will. IU13 [New – interpretation of partner's topic - -IU45**] So, the people of the United States are brothers and sisters IU14 [New] who live in a big family. IU15 [New] The New York is the one of the representation of cultural city. IU16
Partner: i think IU12** they mean that .. IU13** in U.S there is a lot of people not just from U.S IU14** there are people from evey where in the world IU15**	Sun: maybe chat with the detail of the picture.. IU11*	

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SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
Partner: not the pic ..IU16** we have to write about the people in U.S IU17**		[New – based on a combination of own and partner's IU – IU30* IU31*, and IU47**] There are numerous people
	Sun: and do u know IU12* .. which three areas the us has ?? IU13*	IU17 – IU22** [Partner's clipped, extended NP with an adjective, splits partner's IU into two idea units and
	Sun: not in the pic?? IU14*	develops] who came from different countries and areas
Partner: no IU18**		IU18-IU22** [Partner's clipped, part extended, splits
	Sun: so what should we do IU15* ..chat about american people?? IU16*	partner's IU into two idea units and develops] get together IU19 [New] and work for themselves. IU20
		[New] There are several big cities in United States, IU21
Partner: yes IU19**		[New] not only New York City IU22

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SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: maybe you first ...IU17* and i will follow u. IU18*	[New] but only Los Angeles, Sam Diego, Houston and Chicago, IU23 [New] in where many people live. IU24
Partner: ok IU20**		[New] The United States continent is around by Pacific
	Sun: sure..let's start IU19*	Ocean, Atlantic Ocean and Gulf of Mexico IU25 [New]
Partner: the U.S is a counry IU21**		and the continent is big, IU26-IU51** [Partner's
there are people from every where in the		rephrased, syntactic and synonym changes] so there are a
world ..IU22** so it's a counry IU23**		lot of natural resources IU27 [New] which people can
has a lot of cultures IU24**		use.IU28 [New] By the way, people in United States are
and different people and may be		racial, ethnic, cultural diversity. IU29-IU22**,
language IU25**		

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: is true.. IU20*	IU23**[New – based on partner's IUs – IU24**, IU25**]
Partner: the 2nd pic about the building in the U.S ..IU26** so it showes IU27** there are a hight building in some where in U.S like New your city or in some city IU28** ..so it's different from each city ..IU29** every city has a different things IU30**		

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SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: the 3nd pic also about the house in us..<u>IU21*</u> people maybe will not only live in the city <u>IU22*</u> but also live in country.. <u>IU23*</u> Sun: so 2nd , 3nd show myabe IU24* different cluture has different housing sytels.. <u>IU25*</u>	
Partner: ot i think IU31** it talk about the people <u>IU32**</u> who moved from the village to the city .. <u>IU33**</u> sotge U.S had a village in the past <u>IU34**</u> but now everything changed ..<u>IU35**</u> so they have a cities <u>IU36**</u>		

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
Partner: what about the 3rd pic IU37**		
Partner: the 4th IU38**		
	Sun: 3nd show IU26* myabe different cluture has different housing sytels..IU27*	
	Sun: maybe.. IU28*	
Partner: ya IU39**		
Partner: the 4th pic IU40**		
	Sun: you will say something about 4nd one?? IU29*	
Partner: it may be mean the freedom in the U.S .. IU41** so here in people		

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
can say IU42** what ever they want		
IU43** and they can walk in the		
street IU44** and judg the		
government IU45**		
	Sun: 5nd about Los Angeles is the place	
	IU30* where has most different culture in	
	the city. IU31*	
Partner: it's in los angelos or in New		
your city IU46**		
	Sun: maybe.. IU32*	

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
Partner: this brige in New York IU47**		
Partner: i'm sure IU48**		
Partner: the last pic IU49**		
	Sun: so always has a lot of different culture in us city. IU33*	
	Sun: ok,thanks IU34*	
Partner: it's apears IU50** how bit is the U.S IU51**		
	Sun: yes IU35*	
	Sun: ok good job..IU36*	

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: we have done IU37*	
	Sun: ok let's go home now... IU38*	
Partner: she said keep chating IU52**		
Partner: we can chat about something		
different IU53**		
Partner's Postings (by Idea Unit)		
	Sun's Ideas (Idea Unit)	
	Sun: ok sure.. IU39*	
	Sun: i like it IU40*	

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: will u study in USF ? IU41*	
Partner: i think yes IU54**		
Partner: but after 10000000000 year IU55**		
Partner: because i need the toefl IU56**		
Partner: it's too difficult IU57**		
	Sun: wow ... so long time IU42*	
	Sun: rite..it's really very different.. IU43*	
Partner: i guese IU58**		

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	Sun: but i think IU44* i can do it very well	
	IU45*	
	Sun: what major will u attach? IU46*	
Partner: for me it's too difficult U59**		
Partner: they need 550 IU60**		
Partner: business IU61**		
	Sun: i believe that you can do well IU47*	
	Sun: business IU48*... why? IU49*	
Partner: i hope IU62**		
Partner: i dont know IU63**		
Partner: i dont have another choise IU64**		

SCMC Matrix 5.8 (Continued)

Paragraph Comparison: Sun

Partner's Postings (by Idea Unit)	Sun's Ideas (Idea Unit)	Sun's Paragraph (by Idea Unit)
	ShuFen, :) IU50*	
	Sun: good luck..IU51* it time for going	
	home... IU52*	
	Sun: cu tomorrow IU53*	
	Sun: have a nice day IU54*	
Partner: ok see you IU65**		

Coding scheme:

1. <u>IU underlined – content idea unit</u>

2. <mark>Yellow Highlight Color – new idea unit</mark>

3. Grey Highlight Color – own idea unit

4. Blue Highlight Color – partner's idea unit

Sun composed 29 idea units in her post-treatment paragraph. Out of these 29 idea units, I was able to find connection between 15 paragraph idea units and idea units from the discussion. The degree and the nature of these connections were different. Sun used own and partner's rephrased idea units. She also composed new idea units that were based on own or partner's idea unit(s) from the discussion or developed idea units based on topics discussed in the pre-writing discussion. Thus, in addition to the rephrased idea units from the paragraph, I identified five types of new idea units composed by Sun based on their relation with the text: (1) new, based on partner's idea units, (2) new, based on own idea units, (3) new, developing and interpreting a topic suggested by the partner, (4) new, developing of own topic, and (5) new, not traceable in the pre-writing interaction. Table 5.11 presents the types and number of idea units of Sun's paragraph.

Table 5.11

Paragraph idea units: Sun

Intertextuality	High-level				Medium-level			Low-level			No	
Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Number of IUs	0	0	3	4	5	1	0	1	0	0	15	29
Paragraph %	0%	0%	10.34%	13.79%	17.24%	3.45%	0%	3.45%	0%	0%	51.73%	100%

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

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Seven out of the 29 idea units of her paragraph were rephrased idea units from the pre-writing discussion; thus, they revealed high-level intertextual connection with the pre-writing discussion. For example, paragraph idea unit 10 ("*There are a lot of people*) and idea unit 11 (*who came from different cultures and different countries*") were based on the partner's idea unit "*there are people from evey where in the world.*" Sun rephrased this partner's idea unit by applying synonyms, syntax changes and extending it into two idea units. Four idea units were paraphrased own idea units (IU10, IU17, IU18, and IU26), and three were paraphrased partner's (IU1, IU5, and IU6). The rephrasing strategies she used were applying (1) syntax changes, (2) replacing words and phrases with synonymous words and phrases, (3) merging two discussion idea units into one, (4) shortening idea units, (5) extending idea units, and (6) separating one idea unit from the discussion in to two paragraph idea units. These strategies were not used alone but were always combined. Sun made syntax changes and used synonyms in two idea units. She combined the merging strategy with syntax changes in one idea unit. One idea unit was shortened with an application of syntax changes. In one paragraph idea unit Sun used part of the discussion idea unit and extended it by applying syntax changes. Finally, she separated one idea unit from the discussion into two in the paragraph, extending them and applying syntax changes.

Sun also included seven new idea units in her writing which showed connections with the pre-writing discussion. Six of them (IU7, IU8, IU11, IU13, IU16, and IU29) were developed based on several idea units from the discussion; thus, I identified the intertextual connection of these idea units with the pre-writing discussion as medium-level. One was more generally related to topics proposed by her partner; thus, it was of a

low level of intertextuality. For example, idea unit 7 from Sun's paragraph ("*Because of the culture, climate and location are different from each other*") was based on two idea units shared by her partner during the discussion ("*has a lot of cultures* (IU24**) *and different people and may be language*" (IU25**) and further developed by adding the nouns "*climate*" and "*location*". The connection of this paragraph idea unit with the discussion idea units is too distant for it to qualify as paraphrasing. However, it was traceable; thus, I interpreted it rather as a development of discussion idea units towards a new idea unit. Another example of a medium level of intertextual connection between a paragraph idea unit and discussion idea units is illustrated with paragraph idea unit 16 and Sun's discussion idea units 30 and 31 and partner's idea unit 47. In her paragraph, Sun wrote: "*The New York is the one of the representation of cultural city*" (IU16). This idea unit was developed based on idea unit 30* ("*5nd about Los Angeles is the place*") and idea unit 31* (*where has most different culture in the city*") composed by her during the discussion. In addition, in idea unit 16, Sun showed consideration of her partner's correction ("*this brige in New York* " IU47**). She took into account this correction and changed the name of the city in her paragraph idea unit.

Only one idea unit from the post-treatment paragraph showed low-level intertextuality as compared to the pre-writing discussion. In this idea unit Sun interpreted her partner's topic and further developed it. She used her partner's idea of people's attitude towards government proposed in idea unit 45** ("*and judg the government* ") and developed it in idea unit 13 by applying her own interpretation ("*They all follow the rules which established by the government with their will*").

The highest number of idea units composed by Sun were new idea units that,

although related to the topic of the paragraph, were not directly related to the pre-writing discussion, and thus had no intertextual connections with the discussion. These were idea units IU3, IU9, IU12, IU14, IU15, IU19, IU20, IU21, IU22, IU23, IU24, IU25, IU27, and IU28. Most of them were used in the second part of the paragraph after the idea units from the discussion were developed. Sun succeeded in establishing connections between her new idea units that were not related intertextually to the pre-writing discussion and the ones that were related.

Itertextual connections: conclusions. The intertextual connections of Sun's paragraph and the pre-writing discussion on a lexical level were rather weak. The ratio of matching distinct lexical items of her post-treatment paragraph and the pre-writing discussion was lower than the average for the SCMC treatment group. I could not detect intertextual connections on the organizational level.

When I analyzed the intertextual connections on the idea unit level, it appeared that Sun considered the pre-writing interaction when composing her paragraph. Sun based nearly half of her idea units (48.28%) on idea units from the discussion by (1) establishing high-level intertextual connections through the inclusion of rephrased own and partner's idea units from the discussion into her paragraph, (2) establishing medium-level intertextual connections through the use of idea units from the discussion as a basis for development of new idea units, and (3) establishing medium-level intertextual connections through the development of a new idea unit based on a topic shared during the discussion into a new idea unit. In her paragraph writing, Sun showed a strong consideration of her partner's ideas: nine of the 14 paragraph idea units that were connected to the discussion were her partner's idea units.

However, most of her idea units (51.72%) were not related to the discussion. Sun composed 15 new idea units which were not directly related to idea units or topics from the discussion. Thus, I would qualify the intertextual connection of her paragraph as analyzed on the idea unit level as medium.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

In their chat, Sun and her partner engaged in a collaborative online discussion with equal contribution to the task completion. Sun showed her ability to collaborate with her partner and develop the assigned discussion topic. Although her partner had a leading role at certain moments of the discussion, Sun was able to contribute to the discussion equally providing own ideas and developing some of her partner's ideas during the discussion exchange.

How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?

The intertextual connection of Sun's paragraph and the pre-writing discussion was weak on the lexical level. On the organizational level, there was no intertextuality between the pre-writing discussion and the post-treatment paragraph texts. In her paragraph, Sun showed strong consideration of the pre-writing discussion. This consideration was evident from the multiple idea units which showed either high- or medium-level of intertextuality. In addition, in her writing Sun was able to consider both her own and her partner's idea units. However, she also composed a high number of new idea units that were not related to the pre-writing discussion.

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Comparison of the Participants' Backgrounds

Sun and Kang were the two case study actors from the SCMC treatment group who showed the highest degree of gain in their post-treatment writing. Both actors were of approximately the same age: Sun was 27 years old and Kang 24. Although there was a difference in their educational background (Kang was still in the process of obtaining his university degree, and Sun already started her career after graduating from university), their goals for studying English were career related. They expressed similar attitudes towards writing in their interview answers, suggesting that they were motivated to learn how to write better. They were able to articulate their difficulties and positive aspects as related to writing in English. In his note to the writing teacher, Kang recognized the significance of the teacher's role in the process of acquiring better writing skills. In addition, he stated that translation from Korean was a specific difficulty that he experienced in the process of writing. On the other hand, in her interview with me, Sun stressed her lack of extensive vocabulary in English as one of the factors preventing her from being a good writer in English. They both pointed out that the enjoyable aspect related to writing in English was the ability to communicate their ideas.

Both Sun and Kang were experienced computer users. They expressed their appreciation of the possibilities with which the computer provides them. In addition to being an experienced computer user, Sun was also involved in professional tasks related to designing computer software. While Kang did not explicitly specify his CMC experience, Sun shared the various experiences she had with CMC prior to her enrollment at the ELI which included using CMC during team work. Based on specific features of

Kang's CMC interactions, such as the use of emoticons, I assume that he had some experience with CMC as well.

The Pre-writing Interaction

The involvement in the pre-writing task of these two actors was similar: they were able to collaborate with their partners in the process of the SCMC discussion. They showed awareness and consideration of their partner's contribution to the task and demonstrated abilities to share their ideas about the topic. Both dyads, that of Sun and Kang, stayed online after they perceived their discussion to be completed and engaged in a chat not directly related to the topic. This suggested to me that they felt comfortable in the text-based communication environment. Although Kang's dyad posted fewer turns than Sun's dyad, their contribution to the discussion in terms of number of postings were different: Kang posted 19 chat message out of 31 (61.29%), while Sun posted 41 times out of total 83 postings (49.40%). However, the content idea units related to the pre-writing task were similar in number: Kang composed 14, while Sun composed 13 content idea units.

Post-treatment Paragraph Gains and Intertextual Connections

The high gains demonstrated by Kang and Sun were a result of improving multiple text aspects in their post-treatment writings. However, these aspects were mainly different. Out of the five criteria on which they improved, only two overlapped, namely rhetorical soundness of the text and the text vocabulary complexity. Kang also improved lexical information per clause (measured by lexical density analysis), presentation and development of main ideas, and overall language use (the last three criteria were assessed using a multiple trait rubric). Sun, on the other hand, improved the syntactic complexity

(measured by calculating the mean length of t-units), the amount of information present in a single focus (measured by mean length of idea units), and the quantity of overall information present (measured by the number of idea units).

Although the length of these actors' paragraphs was different (Sun composed 29 idea units in her paragraph while Kang composed 12), the intertextual connections of their writing and the pre-writing SCMC discussions shared common characteristics. Their paragraphs showed a low degree of intertextuality on a lexical level: the ratios of matching distinct lexical items of Sun's and Kang's paragraphs and their pre-writing discussions were lower than the average SCMC treatment group ratio. I did not identify any intertextual connections between their pre-writing interactions and paragraphs on an organizational level either. Neither Kang nor Sun discussed paragraph organization with their partners. In addition, in their paragraphs they did not follow the order in which the ideas were posted during the pre-writing discussion.

With both actors, the use of idea units borrowed verbatim from the text of the pre-writing discussion was limited or non-existent. Kang borrowed one of his own idea units from the discussion, which constituted 8.33% of the overall paragraph text, while Sun did not use any of the pre-writing discussion idea units verbatim. Further, they both rephrased idea units from the discussion. In his paragraph, Kang used four rephrased idea units, which constituted 33.33% of his writing. One of these rephrased idea units was contributed by him and three by his partner. Sun used seven rephrased discussion idea units (24.13%). Three of them were based on his partner's discussion idea units and four on her own. Thus, both of them were able not only to collaborate during the discussion

sharing common discussion space, but to transfer their consideration of their partners' pre-writing ideas into their writings.

The strategies they used for rephrasing included the use of synonyms or synonymic phrases and syntactic changes. In addition, Sun reshaped idea units from the discussion when rephrasing them in her writings. She extended and further developed idea units, as well as shortened and merged two idea units from the discussion into one in her writing.

This ability to consider and incorporate the partners' ideas in their writing was further demonstrated in the manner in which they composed new idea units in the paragraph. Part of these new idea units were neither borrowed from the discussion nor rephrased but the actors developed topics that were stated in specific idea units in the discussion. Both Kang and Sun composed idea units based on chat topics which were stated in specific idea units. In five of her new idea units in the paragraph (17.24%), Sun developed topics proposed by her partner in the discussion. Kang composed three such idea units (25%), two of them based on his partner's ideas and one on his own idea. Further, in their paragraphs, both actors developed idea units on topics addressed during the discussion but not directly related to a specific idea unit in the discussion. With both of the actors these were topics proposed by their partners. In her paragraph, Sun composed one new idea unit (3.45%) with more general topic connection with the topic being proposed by her partner, while Kang composed three such idea units (25%). Thus, based on these detected intertextual connections, I determined that on the idea unit level, the actors demonstrated a strong consideration and use of the pre-writing discussions and of their partners' contribution to these discussions.

There was one considerable difference between the two actors in relation to the new paragraph idea units which showed no connection with pre-writing discussions. Sun's paragraph contained 15 such idea units, which constituted 51.72% of her paragraph, while Kang composed only one (8.33%) such idea unit. However, these new idea units were included mostly towards the end of the paragraph after Sun composed a considerable number of idea units related to the discussion. This difference might be attributed not so much to a different level of discussion use during the paragraph composition but to the difference in the actors' writing and typing skills. Sun explicitly stated in her interview that her typing skills were very strong. While I do not have information about Kang's typing skills (he did not answer this question in his ACMC interview), based on the fact that the pre-writing discussion in which he participated was much shorter, (although produced with the same time constraints), I would assume that his typing skills might have been weaker. This, in addition to a possible difference in composition skills, might be the reason for their different inclusion of idea units that were not related to the discussion. Sun might have had more time to think about and incorporate new ideas in order to further extend her paragraph.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

I concluded that these two actors, who showed improvement on their post-treatment writings, shared several common characteristics. During their pre-writing interactions, they were able to engage in collaborative discussions showing consideration and recognition of their partners' contributions. This could be related to a combination of factors: they were skilled computer users with some experience in CMC interactions,

they also expressed somewhat positive attitudes towards writing and were able to define their goals, difficulties, and positive aspects related to writing in English. Further, they perceived writing as being an important medium of communication.

> *How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?*

Both Kang and Sun considered the ideas that were generated during the discussion and used both their own and their partners' ideas in their paragraphs. Thus, although the intertextuality of their paragraphs with their pre-writing discussions was low on the lexical level and non-existent on the organizational level, the analysis on the idea unit level revealed medium to high intertextuality. They were able to consider and incorporate their own and their partner's ideas into their post-treatment writing. The differences between Sun and Kang in terms of the number of the new paragraph idea units not related to the discussion could be attributed to the different level of typing and composition skills of the two participants. However, in my opinion in these two cases it was important to view this difference taking into account the fact that Kang and Sun used in their paragraphs the majority of the ideas shared during the discussion.

SCMC Actors: Comparison

The comparison of the four SCMC case studies presented above revealed that there were both commonalities and differences between the actors who demonstrated high and low gains in their post-treatment writings. In the current section of Chapter V, these differences and commonalities are presented in the context of the research questions which the case studies aimed to answer: How do peers participate in synchronous CMC

interactions? How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas? The following trends considered in the data analysis were compared: (1) background, (2) the specifics of pre-writing CMC interactions, and (3) post-treatment paragraph gains and intertextual connections.

Comparison of the Participants' Backgrounds

The four participants who performed their pre-writing discussion in an SCMC environment were of somewhat different backgrounds. Three of the participants (Ajwad, Kang, and Sun) were in their mid twenties, close to the mean age of the students enrolled in the writing class during the two semesters in which the data were collected, while the fourth actor (Kamil) was much younger: 19 years old. This difference was also reflected in their educational level. Ajwad and Sun had already obtained their university degrees. Kang, although still a university student, was studying English with specific career-related goals in mind. On the other hand, Kamil, who had graduated from high school, was just starting his university studies and did not share any specific career related goals with regards to his English language studies. The older actors were able to define their perceptions of writing, while Kamil's answer revealed a rather general negative attitude towards writing.

In terms of their computer skills, all four were experienced computer users who had participated in computer-mediated communication before the study. Sun indicated explicitly that she had used CMC for personal communication as well as study and job related tasks, while the other actors were not specific about the type of CMC experiences they had had before the semester in which data were collected.

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The Pre-writing Interaction

The pre-writing interactions of Sun and Kang, the actors who demonstrated the highest positive gains in their post-treatment writing, revealed the ability to collaborate with their partners during the task completion. Their pre-writing interactions were extensive and addressed multiple aspects of the task. Their discussions involved numerous turns: Kang and his partner posted 31 messages, and Sun and her partner posted 83. Although their pre-writing discussions differed in terms of total number of postings, both Sun and Kang contributed significantly to their dyadic discussions in terms of number of postings: Kang posted 19 messages and Sun 41. Their contributions as measured based on content idea units were similar: Kang posted 14 content idea units and Sun 13. Although, in their discussions, both dyads explicitly indicated that they perceived the task to be completed, they failed to address paragraph organization during the discussion. In addition, both Sun and Kang remained online after they perceived the task to be completed and chatted about their personal matters for the remaining time allocated for the SCMC pre-writing discussion.

Although Ajwad's post-treatment writing revealed the lowest gain, I found similar trends in his pre-writing SCMC discussion and the SCMC discussion of the two actors who had the highest gain. He was able to engage into a collaborative discussion with his partner, contributing to the development of ideas during the discussion. The discussion was extensive, involving 82 turns posted by Ajwad and his partner. Ajwad posted 39 times during the discussion, contributing 20 content idea units. In addition, Ajwad and his partner discussed paragraph organization. Thus, Ajwad's pre-writing discussion and the manner in which he participated in it shared similar characteristics with the pre-writing

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discussions of the actors who demonstrated the highest gains in their post-treatment writings. In their interviews, Ajwad and Sun shared that the task was helpful. Sun pointed out that although chat, in her opinion, would not support the development of writing skills, the opportunity to share opinions with her partner during the task helped her. Ajwad also pointed out that the task was helpful for him, allowing him to organize better his ideas for the paragraph.

On the other hand, Kamil, who was the second low-gain SCMC actor, participated in his pre-writing discussion differently. His contribution was limited and rather passive. The discussion itself was short: a total of 10 turns was posted by Kamil and his partner. In addition, Kamil posted only three content idea units. He disengaged from the discussion early, showing disagreement with his partner and lack of motivation to complete the discussion. Later he shared in his interview that the task was boring, which I found to be related to his overall view of writing as a boring task.

From this comparison, it appears that collaborative dyadic interaction patterns were used both by the actors who gained the most on the post-treatment writing as well as by one of the actors who gained the least on the post-treatment writing. However, passive patterns and early disengagement were demonstrated by the second actor who showed low gains. Thus, the contribution to the discussion was linked to the patterns of interaction rather than to the post-treatment writing gains: the collaborative actors were the ones to contribute significantly to the discussion, while the actor who demonstrated a passive trend failed to contribute a significant amount of information to the discussion.

Post-treatment Paragraph Gains and Intertextual Connections

In their post-treatment paragraphs, the SCMC actors who demonstrated high and low gains improved different aspects of their writing. The low-gain actors, Kamil and Ajwad, improved on two out of the eight aspects considered in the text analysis in this study, while the high-gain actors, Sun and Kang, improved on five. Both Kamil and Ajwad improved the lexical information per clause of their post-treatment paragraphs measured by lexical density analysis. In addition, Kamil improved the presentation and development of his paragraph, while Ajwad improved the amount of information present in a single focus (measured by mean length of idea units). Sun and Kang improved their post-treatment writing on two common text measures: vocabulary complexity and rhetorical soundness. Sun also improved on the syntactic complexity (measured by calculating the mean length of t-units), the amount of information present in a single focus (measured by mean length of idea units), and the quantity of overall information present (measured by the number of idea units). On the other hand, Kang's post-treatment writing improved on lexical density, presentation and development and overall language use. Thus, the high gains of Sun's and Kang's post-treatment paragraphs were a result of improving multiple aspects of their writing rather than improving significantly on one or two specific aspects, while the low gains of Ajwad and Kamil were a result of failing to improve on multiple aspects of their writing. Table 5.12 presents the textual aspects on which the actors who participated in the SCMC pre-writing discussions improved in their post-treatment paragraphs.

Table 5.12

SCMC Actors: textual aspects improved

Tex Analysis Criteria	Low SCMC		High SCMC	
	Ajwad	Kamil	Kang	Sun
Syntactic complexity (T-units mean length)				X
Information in a single focus (mean length of idea units)	X			X
Overall information present (number of idea units)				X
Lexical information per clause (lexical density)	X	X	X	
Vocabulary complexity (frequency of unique words)			X	X
Rhetorical soundness			X	X
Presentation and development of main ideas		X	X	
Overall language use			X	

The intertextual connection analysis of all four SCMC case study actors revealed that these connections were weak when their pre-writing discussion and the post-treatment paragraphs were compared on a lexical level. These connections were also weak in terms of paragraph organization as related to the sequencing of discussion ideas and the organization of discussed paragraph. However, there was a considerable difference in the intertextual connections of the high-gain actors' paragraphs and the low-

gain actors' paragraphs when compared on an idea unit level. The idea unit tabulation for

the four SCMC actors is presented in Table 5.13.

Table 5.13

SCMC Actors: Paragraph Idea Units and the Level of Intertextual Connections

Participant and Level	Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
Low SCMC Ajwad	Number of IUs	0	0	1	1	0	0	0	2	4	3	10	21
	Paragraph %	0	0	4.76	4.76	0	0	0	9.52	19.05	14.29	47.62	100
	Intertextuality	High: 9.52%				Medium: 0%			Low: 42.86%			None: 47.62%	100
Kamil	Number of IUs	0	0	0	0	1	2	0	1	1	0	8	13
	Paragraph %	0	0	0	0	7.69	15.38	0	7.69	7.69	0	61.55	100
	Intertextuality	High: 0%				Medium: 30.76%			Low: 15.38%			None: 61.55%	100

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Table 5.13 (Continued)

SCMC Actors: Paragraph Idea Units and the Level of Intertextual Connections

Participant and Level		Criteria	1	2	3	4	5	6	7	8	9	10	11	Total
High SCMC	Kang	Number of IUs	0	1	0	3	2	1	0	3	1	0	1	12
		Paragraph %	0	8.33	0	25	16.68	8.33	0	25	8.33	0	8.33	100
		Intertextuality		High: 33.33%			Medium: 25%			Low: 33.33%			None: 8.33%	100
	Sun	Number of IUs	0	0	3	4	5	1	0	1	0	0	15	29
		Paragraph %	0	0	10.34	13.79	17.24	3.45	0%	3.45	0	0	51.73	100
		Intertextuality		High: 24.13%			Medium: 20.69%			Low: 3.45%			None: 51.73%	100

Table 5.13 (Continued)

SCMC Actors: Paragraph Idea Units and the Level of Intertextual Connections

Criteria Coding Scheme:

1. Partner's verbatim
2. Own verbatim
3. Partner's rephrased
4. Own rephrased
5. New based on partner's idea unit
6. New based on own idea unit
7. New based on combination of partner's and own idea units.
8. New development or interpretation of partner's topic
9. New development of own topic
10. New development of own and partner's topic
11. New – no traceable connections with pre-writing discussion

As it is evident from Table 5.13, the two low-gain actors, Ajwad and Kamil, composed a high number of new idea units not related to the discussion: Ajwad composed 10 (47.62%) new idea units out of 21 total paragraph idea units, and Kamil composed 8 (61.55%) new idea units out of 13 total paragraph idea units. The idea units composed by Ajwad and Kamil, for which I identified intertextual connections, were mostly of either medium or low level of intertextual connection with the discussion. In Ajwad's writing, only two idea units (9.52%) showed high-level intertextual connections with the discussion, none of the idea units were of medium level, and 42.86% of the idea units had low intertextual connection with the discussion. Kamil composed three idea units (30.76%) with medium intertextual connections with the pre-writing discussion, and two idea units (15.38%) with low connection. Thus, their paragraph writings and pre-writing discussions showed medium to low intertextuality.

In addition to the medium to low level of intertextuality, I also found that their consideration of partners' ideas was somewhat limited. Kamil's consideration of partner's ideas was low. In his paragraph, Kamil composed two of his idea units (15.38%) based on his partner's idea units. One had a medium intertextuality level and one had a low intertextuality level. Ajwad showed a higher level of consideration of his partner's ideas. He composed three idea units based on his partner's idea, which constituted 14.29% of his paragraph. However, he also composed three idea units (14.29%) considering a combination of his and his partner's idea units from the discussion at a low level of intertextuality. Thus, I would suggest that in addition to the medium to low intertextual connections between the pre-writing discussion and the post-treatment paragraphs, the low-gain students also showed lower consideration of their

partner's contribution to the discussion. I would suggest that one of the factors that might have contributed to the higher inclusion of partner's ideas in Ajwad's writing was the collaborative mode of the pre-writing discussion of his dyad.

Sun and Kang, the two actors who had positive gains on their post-treatment paragraphs, demonstrated higher ability to use ideas generated during the pre-writing chat. They were able to transfer into their writings their consideration of their partner's ideas, which they showed during their discussions. Kang's paragraph was more closely related to the discussion as compared to Sun's paragraph. In four out of the total 12 paragraph idea units (33.33%), I found high level intertextual connections with the pre-writing discussion: Kang used one of his own idea units verbatim and rephrased three. Further, three paragraph idea units (25%) showed a medium level of intertextual connection. Finally, in four paragraph idea units (33.33%), he developed topics mentioned in the discussion but these paragraph idea units were not related to specific idea units from the discussion which showed intertextual connections of low level. Only one of Kang's paragraph idea units was new with no traceable connection with the discussion.

Sun, also showed high consideration of the ideas produced during the discussion and included both her own and her partner's ideas in her paragraph. However, 51.73% of her idea units were new and not traceable to the pre-writing discussion. Although, the percentage of the new idea units not directly related to the discussion was high in Sun's writing, she incorporated most of the ideas shared during the discussion. I found that 24.13% of her paragraph idea units were either her own or partner's paraphrased idea units; thus, they revealed high-level intertextual connections with the pre-writing

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discussion. In her paragraph, Sun composed 20.69% idea units with medium-level intertextual connections with the pre-writing discussion. Only 3.45% were idea units of low intertextuality. Thus, taking into consideration that the new idea units which were not traceable to the discussion mainly appeared at the end of Sun's paragraph, I would speculate that she considered and exhausted the ideas shared during the discussion which led her to the development of new ideas on the assigned topic.

Three of the participants paraphrased discussion idea units when incorporating them into their post-treatment paragraphs. The paraphrasing techniques that they used were of various kinds. Ajwad and Kang mostly applied the use of synonyms and synonymic phrases as well as syntax changes, while Sun used a variety of techniques including development of idea units, as well as shortening and merging idea units from the discussion. Kamil did not paraphrase any of the discussion idea units.

Answering the Research Questions

How do peers participate in synchronous CMC interactions?

Based on this between group comparison, I would suggest that the high- and low-gain actors demonstrated a number of differences and similarities in terms of their participation in the SCMC discussion. The actors who were motivated and were able to define a specific goal as well as specific difficulties and enjoyable aspect of writing in general and writing in English tended to engage in a collaborative discussion. Kamil, who expressed a negative attitude towards writing transferred this attitude towards the task: he was passive during the discussion and disengaged early from the task. Thus, the patterns of interaction and contribution to the pre-writing task for these actors were not apparently

related to their gain level but possibly to the way they perceived the task and the acquisition of writing skills in English and the task specifically.

> *How do they use the specific ideas and language generated during these interactions in their writings? What are the differences and similarities in the implementation of these ideas?*

The intertextual connections on the lexical level for all SCMC actors regardless their gains were weak. The intertextuality on the organizational level was also weak for three of the actors; only Ajwad (the low-gain collaborative actor) showed a considerable intertextuality of his paragraph and the pre-writing discussion on this level. The other actors neglected to discuss this aspect of the pre-writing task.

In terms of intertextuality on an idea unit level, the low- and the high-gain SCMC actors differed. Sun and Kang were able to establish higher level intertextual connections between their post-treatment writing and the pre-writing discussion; as a result, they may have benefited more from their pre-writing discussion as compared to the low-gain actors. While composing their paragraphs, they were also somewhat more considerate of their partner's contribution to the discussion, as compared to the low-gain participants. This was demonstrated by the higher degree of partner's ideas incorporation into their paragraphs. However, Ajwad took a somewhat middle position in terms of considering his partner's ideas. He demonstrated it to a higher extent than Kamil, which could be attributed to his collaborative interaction patterns.

All of the actors, except for one of the high-gain actors, Kang, composed a considerable number of new idea units not directly traceable to the pre-writing discussion. However, the low-gain actors, Ajwad and Kamil, did this while neglecting

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some of the ideas shared in the discussion, while Sun, in addition to the new idea units, composed idea units based on almost all of the ideas shared during the discussion.

ACMC and SCMC Actors: Comparison

In the current section, the actors in the eight case studies that were presented in this chapter are compared. They were selected based on their gains when their pre- and the post-treatment writings were compared. Four of the actors – Felipa, Isabella, Azad, and Shin participated in the ACMC treatment group. Felipa and Isabella showed the highest gain among all Level III students (n=34) who participated in the pre-writing discussion using ACMC mode of communication, while Azad and Shin showed the lowest gain. The four actors who participated in the SCMC pre-writing discussion were Ajwad, Kamil, Kang, and Sun. Kang and Sun achieved the highest gain among all Level III students who participated in the pre-writing task using SCMC mode of communication (n=26), while Ajwad and Kamil had the lowest gains in this group. Further, I present and compare certain aspects of the actors' backgrounds and compare their CMC interactions and the intertextual connections of their paragraphs and their pre-writing discussion in order to answer the research questions proposed for the qualitative instrumental case study part of current research project: *Research Question 1:* How do peers participate in asynchronous and synchronous CMC interactions? *Research Question 2: (a)* How do they use the specific ideas and language generated during these interactions in their writings? *(b)* What are the differences and similarities in the implementation of these ideas?

The eight participants came from seven different countries: Felipa was from Colombia, Isabella from Italy, Kang and Shin were from Korea, Kamil was from Kuwait, Azad from Qatar, Ajwad from Saudi Arabia, and Sun was from Taiwan. Five of the actors, Isabella, Felipa, Ajwad, Kang, and Sun – were in their mid to late twenties. Their age was close to the average age of the Level III students who took classes during the data collection period (mean age=25.5 years). Three of the actors were at different ages: Kamil and Azad were 19 years old, and Shin was in her late 30-s. In terms of their educational background, only Kamil had recently graduated from high school, while the other seven actors were either university students in their countries who interrupted their studies in order to improve their English language skills (Felipa, Azad, and Kang), or had already graduated with a university degree (Shin, Ajwad, Isabella, and Sun).

Everyone, except for Shin, was an experienced computer user who had performed various tasks related to their everyday life using computers. Shin had limited computer skills. Although this was not her first semester at the ELI, and she had participated in the computer skills workshops offered at the ELI and had used computers during the computer laboratory sessions incorporated into the ELI curriculum, she still felt uncomfortable and reluctant using computers. She also shared with me that computer-mediated interaction made her uncomfortable, because of her limited computer-use expertise. In addition, the CMC treatment interaction task made her feel uncomfortable because she was expected to post while in class she could remain silent.

Further, all of the actors had used CMC prior to the period in which data were collected. However, based on my interviews with the actors, only two of them, Isabella

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and Sun, had previous experiences of using CMC for task-solving purposes. Isabella had used computers, mainly email, to communicate with researchers and peers in her professional field in the process of writing her thesis. Sun had participated in team-work related tasks using both synchronous and asynchronous communication. These two actors were among the students who benefited from the pre-writing CMC discussion improving various aspects of their writing.

In their interviews with me, all actors, except for Kang, shared their educational backgrounds and their perceptions of writing. While all of the case study participants who showed positive gains were willing and able to define their perceptions of writing and were able to articulate the enjoyable and difficult aspects of writing in English, Azad and Kamil were reluctant to provide this information. Azad avoided answering the questions, admitting in an informal conversation with me that it was hard for him to formulate his opinions about writing, while Kamil provided a short answer pointing out that writing was a boring task for him. In addition, Kamil shared that he valued teachers' lectures and did not appreciate students' involvement in class interactions. In my opinion, Azad's reluctance to articulate his writing experiences and Kamil's perception of writing as a boring task suggested rather negative attitude towards writing.

Based on the background information, I would suggest that for three of the actors (Kamil, Shin, and Azad) the pre-writing discussion followed by the paragraph writing was a difficult task, and they appeared not to have benefited from it. Their previous experiences were related to this difficulty. For Azad and Kamil these were the negative attitudes towards writing. In addition, for Shin and Kamil, the task involved stepping out of their zone of comfort when required to participate actively in the dyadic pre-writing

interactions. Two of the students who benefitted from the task Shin and Isabella, seemed to be somewhat better prepared for the CMC pre-writing discussion due to their previous experiences with CMC that involved task-solving interactions.

The Pre-writing Interaction

The comparison of the pre-writing dyadic interactions revealed that the actors applied different dyadic interaction patterns. This difference was not related to their gains; rather, they were based on the mode of interaction. All four actors, who participated in ACMC pre-writing discussion, demonstrated dominant patterns, and the same patterns were demonstrated by their partners. These actors and their partners approached the pre-writing task completion separately without engaging in a discussion of the topic. They simply posted their views about the topic as based on the pictures provided for discussion. Thus, there was no evidence of an attempt to create a joint problem space. On the other hand, the SCMC actors' interaction was collaborative, with the exception of Kamil who was rather passive and disengaged from the task early without completing the discussion of the topic.

In addition to the dyadic pattern differences, the ACMC and the SCMC interactions differed in terms of the number of the postings. The ACMC discussions tended to involve longer postings that resembled in their format and organization a paragraph or paragraph segments. Both high- and low-gain ACMC actors posted much fewer times as compared to their SCMC counterparts; they mostly used complete sentences, providing lists of ideas related to the pictures they discussed. Most of the idea units the ACMC actors posted were directly related to the task topic. There were fewer non-content idea units in which the actors would greet and address their partners, direct

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turn-taking, and/or request more information or clarification. On the other hand, all of the SCMC interactions were more dynamic with a higher number of non-content idea units exchanged between the dyad members. The collaborative SCMC dyads also posted a much higher number of turns; only the passive/dominant dyad in which Kamil participated had a number of turns comparable with the ACMC dyad that had the highest number of turns, that of Azad. However, I found that this similarity was triggered by the way in which Azad and his partner engaged in the ACMC interaction task: they used the ACMC application for synchronous exchange of messages.

Another aspect of the CMC interaction that was different when comparing the SCMC actors and the ACMC actors was the contribution to the task. For the ACMC actors, the post-treatment gain was directly related to the amount of contributed content idea units. Thus, Isabella and Felipa, who posted significantly higher number of content idea units, had high gains, as compared to Azad and Shin, the low-gain actors. In fact, the number of the content idea units of the high-gain ACMC actors was comparable to the number of idea units of the collaborative SCMC actors. For the SCMC participants, the contribution to the task was only partially related to their gains; it, rather, reflected the mode of interaction. As compared to the low-gain ACMC actors and the SCMC actor who was passive during the pre-writing task completion, the collaborative SCMC actors and the ACMC actors who had high gains contributed significantly to the discussion in terms of idea units.

Post-treatment Paragraph Gains and Intertextual Connections

The analysis of the intertextual connections of the pre-writing CMC interactions and the post-treatment paragraph aimed to reveal how the participants used their pre-

writing discussions when composing their paragraphs. I considered three different aspects of intertextuality: (1) lexical level intertextuality, (2) intertextuality on paragraph organization level, and (3) intertextuality on an idea unit level.

The analysis of the lexical level intertextuality was performed by matching distinct lexical items. Using the software designed for the current study, the lexical items in each CMC interaction were identified and matched against the post-treatment paragraphs and the ratio of matching distinct lexical items to the overall distinct lexical items from the CMC interaction was calculated which allowed obtaining the matching distinct lexical items (DLI) ratio score. Further, this score allowed me to suggest the degree to which the post-treatment paragraphs were related to the pre-writing discussions on a lexical level. The detailed descriptions of the procedures related to the score calculation are presented in Chapter IV. The comparison of the matching DLI scores of the actors in the instrumental case studies to the average scores of the ACMC and the SCMC treatment groups that participated in the quantitative stage of the study revealed that all actors had lower than average intertextual connection on a lexical level with the exceptions of the two high-gain ACMC actors; however, the high lexical intertextuality of Felipa's paragraph and pre-writing discussion was evident only when just her posting was considered.

On the organizational level, I found that the consideration of the organization proposed during the discussion was not necessarily followed by the actors in their paragraphs. Four actors mentioned paragraph organization during their pre-writing interaction: Shin (a low-gain ACMC actor), Isabella and Felipa (high-gain ACMC actors), and Ajwad (a low-gain SCMC actor). Isabella followed her partner's

organization suggestions, while the other three actors used loosely the organization

suggestions shared during the pre-writing discussion. The rest of the actors did not

discuss the organization of their paragraphs, and there was no evidence that they followed

in their paragraphs the sequence in which the ideas were posted during their pre-writing

discussion. Thus, I could not identify a trend between the participants in terms of the

differences in intertextuality on organizational level when the CMC mode and gains were

considered; however, I could suggest that, in general, the intertextual connections on this

level are rather weak.

The high-level intertextual connections, which involved verbatim use of idea units

from the discussion, were more evident in the paragraphs composed by the ACMC

actors. Each of the two low-gain actors used word-for-word one of their partners' idea

units. Felipa, one of the high-gain ACMC actors used verbatim three of her own idea

units, while the other high-gain actor, Isabella, did not use any. Only one SCMC actor,

Kang, used one of his own idea units from the pre-writing discussion without

incorporating any changes. Thus, I could conclude that the ACMC actors tended to use

idea units borrowed verbatim from their discussions.

I also considered paraphrased idea units to show a high level of intertextual

connection. The comparison of the paraphrased idea units of the ACMC participants

revealed that both high-gain participants and low-gain participants used in their

paragraphs either their partners' or their own idea units from the pre-writing discussion

after rephrasing them. The low-gain actors applied the use of synonyms, syntactic

changes, clipping idea units, and content changes within an idea unit. In addition to the

rephrasing strategies used by the low-gain actors, the high-gain actors extended idea units

borrowed from the discussion, added organizational words and phrases, developed two idea units based on one, or combined two idea units into one. Thus, I would suggest that the low-gain ACMC actors tended to apply the changes within the boundaries of the idea units borrowed from the pre-writing discussion, while the high-gain ACMC actors were able to move beyond the single idea unit boundaries.

The paragraphs of the SCMC actors showed more limited high-level intertextual connections that involved idea unit rephrasing, as compared to the paragraphs of the ACMC actors. In addition, the low-gain SCMC actors used paraphrased discussion idea units less than the high-gain ones. They mostly applied the use of synonyms and synonymic phrases. The use of paraphrased idea units from the discussion by the SCMC high-gain actors was comparable to the low-gain ACMC actors and much lower as compared to the ACMC high-gain actors. Only Sun applied rephrasing techniques similar to those of the high-gain ACMC group techniques which allowed her to move beyond the single idea unit boundaries. Thus, the ACMC actors showed overall stronger intertextual connections of a high intertextuality level when considering the use of both verbatim and rephrased idea units. In addition, the high-gain actors, regardless the mode of CMC pre-writing communication, were more likely to move beyond the single idea unit boundaries when rephrasing idea units borrowed from the discussion. Finally, the high-gain ACMC actors were also able to implement grammar correction to the idea units they were rephrasing.

When analyzing the intertextual connections on a medium level, I considered paragraph idea units whose topic could be traced to a specific idea unit or units from the discussion but the changes made were beyond paraphrasing. It seems that the ACMC

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actors were less likely to establish intertextual connections on this level. Only Shin composed several paragraph idea units at this level of intertextual connection, while Felipa had only one such idea unit in her paragraph, and Azad and Isabella had none. On the other hand, the SCMC group participants were more likely to establish intertextual connection on a medium level between their pre-writing discussions and their paragraphs. Only Ajwad did not have any idea units in his paragraph that would reveal this level of intertextuality; the rest of the SCMC participants based a considerable number of their paragraph idea units on topics traceable to idea units from the discussion.

The low level of intertextuality showed consideration of a topic mentioned during the discussion with no explicit relation between specific paragraph and discussion idea units. At this level of intertextuality, I could not trace any consistent patterns among the actors based on the mode of their interaction and their gain level. In each of the mode/gain pairs, one of the actors revealed stronger intertextual connections, and one showed weak or no low-level intertextual connections. With regards to the new idea units composed in the paragraph which do not reveal intertextual connections with the discussions, I also could not find a trend. Most of the actors composed a significant number of idea units that developed the topic of the paragraph but were not related to the discussion. One low-gain ACMC actor, Azad, did not compose any paragraph idea units not related to the discussion and one of the high-gain SCMC actors, Kang, composed one such idea unit. Thus, I would suggest that most of the actors, regardless to their gains and mode of pre-writing interaction, tended to develop further their paragraphs including idea units that presented topics related to the overall paragraph topic but not mentioned in the discussion.

In the analysis of intertextuality, I also considered the use of partners' ideas shared during the discussion. Based on the comparison across the groups, I could not find a consistent pattern. All of the actors, with the exception of Felipa (a high-gain ACMC actor) considered their partners' ideas. However, in the SCMC group, when the dyadic patterns of interaction were taken into account for the comparison rather than the gain level, it appeared that the collaborative actors tended to include more of their partners' idea units or topics than the passive actor.

Answering the Research Questions

Research Question 1: How do peers participate in synchronous and asynchrounous CMC interactions?

Based on the across group comparison of actors' CMC interactions, I would propose that the CMC mode of interaction affected strongly the nature of dyadic patterns of interaction. The ACMC actors, regardless of their post-treatment gains, were mostly concerned with their own postings, demonstrating dominant patterns of interaction. On the other hand, the SCMC actors were more likely to participate in a collaborative mode of interaction. The collaborative dyadic patterns they demonstrated during the interactions were not necessarily related to their post-treatment gains; however, the passive SCMC actor had a low treatment gain.

The mode of interaction may have influenced the number of postings as well. However, when the postings were analyzed on an idea unit level, considering content idea units, it appeared that the high-gain ACMC actors and the collaborative SCMC actors, regardless of their gain, contributed significantly to the discussion, while the low-

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gain ACMC actors and the passive SCMC actor failed to contribute significantly to the interaction on the assigned topic.

Research Question 2: (a) How do they use the specific ideas and language generated during these interactions in their writings? *(b)* What are the differences and similarities in the implementation of these ideas?
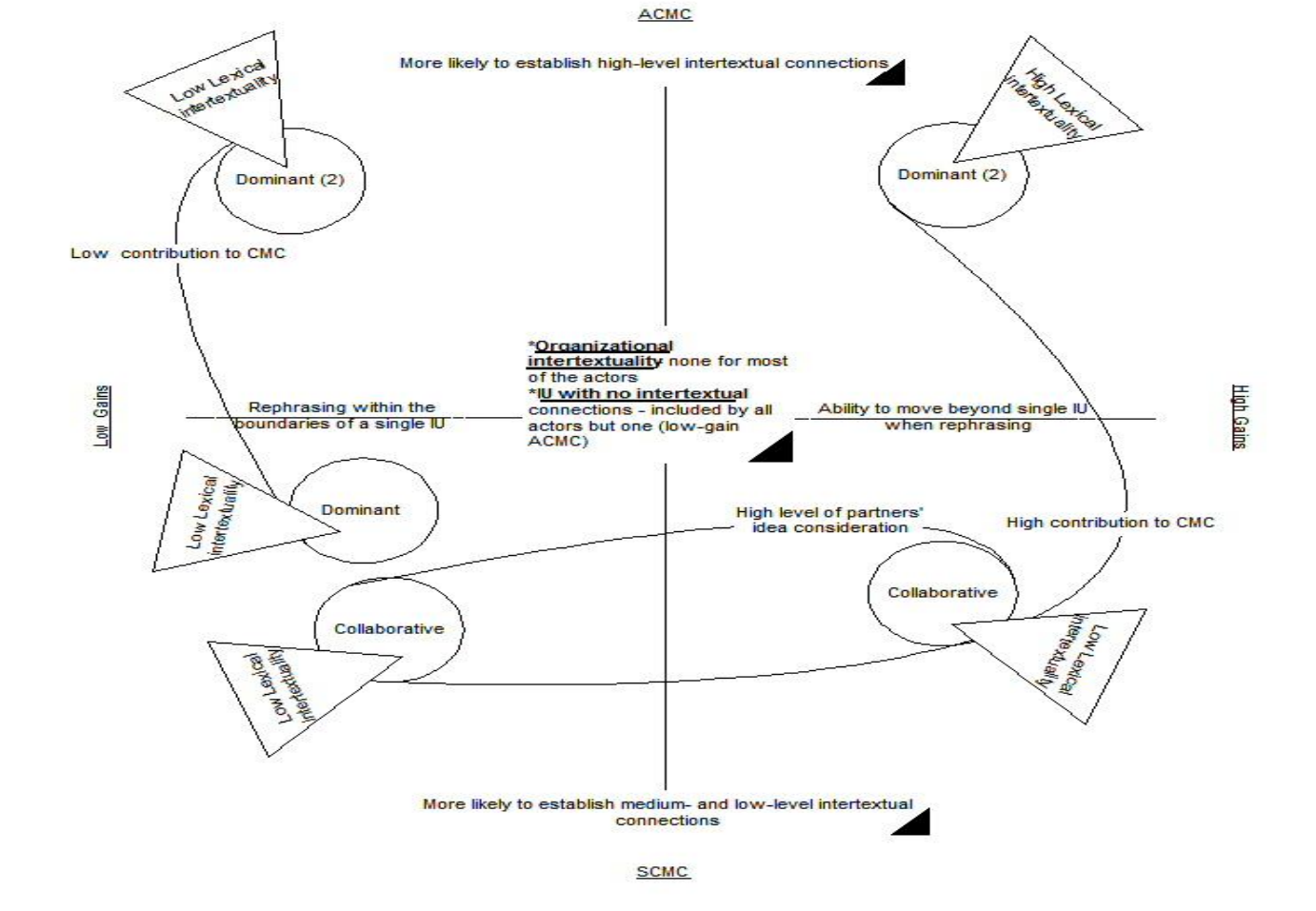
In order to answer this research question, I considered three levels of intertextuality: lexical, organizational, and idea unit levels. The high-gain ACMC actors demonstrated higher level of lexical intertextuality as compared with the rest of the actors. On organizational level, most of the actors, regardless their mode and gain level showed no intertextual connections. Only two ACMC actors considered partially the paragraph organization proposed during the discussion. In addition, organization was more likely to be discussed by ACMC actors.

With regard to the intertextual connections between the pre-writing discussion and the post-treatment paragraph, when idea units were used as a unit of analysis, I found several different trends related to the level of intertextual connections and consideration of partners' contribution to the discussion: (1) The ACMC actors tended to use more high-level intertextual connections by borrowing verbatim or rephrasing idea units from the discussion; (2) Medium level intertextual connections were more likely to be established in the SCMC actors' paragraphs; (3) High-gain SCMC participants were more likely to establish high and medium levels of intertextual connections, as compared to the low-gain participants who participated in the same CMC mode; (4) High-gain actors, regardless to the CMC mode, were more likely to move beyond the single idea-unit boundaries when paraphrasing; (5) High-gain ACMC actors were able to implement

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some grammar correction into the idea units when rephrasing them; (6) Collaborative

actors, who were all SCMC actors, were able to consider and include in their paragraphs

their partners' contributions to the discussion; (7) The collaborative actors, who also had

high gains, were able to consider their partners' contribution to the discussion to a higher

extent, as compared to the low-gain collaborative SCMC actor; and (8) Most of the actors

developed their paragraphs beyond the topics discussed during the pre-writing

interactions. Figure 5.1 presents the above findings in a graphic format.

Figure 5.1

Instrumental Case Study Findings

ACMC

More likely to establish high-level intertextual connections

Low Lexical intertextuality

Dominant (2)

High Lexical intertextuality

Dominant (2)

Low contribution to CMC

Low Gains

*Organizational intertextuality none for most of the actors
*IU with no intertextual connections - included by all actors but one (low-gain ACMC)

High Gains

Rephrasing within the boundaries of a single IU

Ability to move beyond single IU when rephrasing

Low Lexical intertextuality

Dominant

High level of partners' idea consideration

High contribution to CMC

Collaborative

Collaborative

Low Lexical intertextuality

Low Lexical intertextuality

More likely to establish medium- and low-level intertextual connections

SCMC

Summary of Findings

The communication environment as well as the patterns of dyadic interaction influenced the communication that took place during the pre-writing stage and this influence could be traced to the first-draft writings of these eight extreme-case participants in the study. The immediacy of peer responses during the pre-writing discussion in SCMC environment allowed for creating joint problem-solving space, while the time- and place-independence of the ACMC interaction isolated the dyad members from one another. Further, the findings with regards to the pre-writing communication and first draft outcomes are summarized.

First, there was a difference in the nature of the postings produced in the two communication environments. The ACMC mode prompted the participants to post longer and fewer messages with more complete sentence structure. The SCMC participants' discussions were completed in short interactive postings which contained mainly phrases and syntactically incomplete utterances.

Second, the degree of involvement in the pre-writing task in terms of information contributed was related to the communication environment, the gain level, and the dyadic pattern of interaction. The higher involvement and the collaboration during the task completion might have supported the first-draft writing outcomes. In addition, the task involvement might have been influenced negatively due to the challenges of the text-based communication environment.

Third, the intertextual connections between the pre-writing postings and first drafts were evident for both the ACMC and the SCMC actors. However, the degree of intertextuality on the lexical, idea unit, and organizational levels differed. Some of the

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aspects of the intertextual connections were influenced by the environment in which the pre-writing task completion took place, other by the gain level of the participants. On a lexical level, the intertextual connections were strongest with the writings of the actors who showed improvement of their writing after completing the pre-writing task in an ACMC mode. The CMC mode also influenced the intertextuality on an idea unit level. When the pre-writing task was completed in an ACMC mode, the participants tended to apply less rephrasing to the idea units borrowed from the discussion as compared to the SCMC participants. However, the mode of communication did not affect more complex rephrasing when idea units from the discussion were merged or developed into more than one idea units; these changes were more likely to be applied by the participants who had high writing gains. The collaborative dyadic pattern of the discussion (evident only with the SCMC actors) promoted higher consideration of partners' contribution to the pre-writing discussion when the first draft was composed. The intertextuality on the organizational level was weak or non-existent which suggests that the complexity of the pre-writing task prevented most of the actors to attend to this aspect of the task as well as that they may benefit from multiple cycles of the pre-writing task. The specifics of the organizational intertextuality also suggest that, in the examined cases, the text organization was a fluid aspect of the writing process and writers changed planned text organization in their first drafts.

Finally, the results of the analysis suggest that regardless to the mode of communication in which the pre-writing task was completed and the gain level of the actors, new ideas were incorporated into the first drafts. Thus, during the pre-writing stage, only a general blueprint of ideas was created. All actors further refined and

extended the outcomes of the pre-writing discussion through the addition of more details or new interpretation of the pre-wring ideas.

Chapter Summary

This chapter presented eight case studies which actors were selected using Extreme/Deviant sampling technique (Kemper et al., 2003). The presented analysis and the comparison of these case studies aimed to reveal the dynamics of two specific stages of the writing process accounting for the social context within which they took place. The outcomes of the case study analysis were compared based on actors' mode of pre-writing interaction, dyadic pattern of interaction, and gain-level. The analysis part of the chapter was concluded with a section in which a comparison across gains and CMC groups was performed. Further in the chapter, the outcomes of the study were outlined answering the two proposed research questions. The chapter was concluded by a section in which the findings were summarized and discussed. In the following chapter, the summary of the overall study findings and their discussion will be addressed, along with implications for further research and pedagogical recommendations.

CHAPTER VI: SUMMARY, DISCUSSION, RECOMMENDATIONS, AND

LIMITATIONS

Introduction

The theoretical framework of the current study is the Writing as a Process

Approach (Grabe & Kaplan, 1996). The study addressed two specific stages of the

writing process, accounting for the social contexts within which they took place. Thus,

students' participation in the first two stages of the writing process, the pre-writing and

first draft stage (Grabe & Kaplan, 1996), were observed and analyzed. The focus of

analysis was the social environment, including the learning task, peer interaction, mode

of communication, and the intertextual connections between pre-writing discussions of

the participants and their first drafts. Tables summarizing the qualitative and quantitative

findings along with the research questions are provided in Appendices 20-22.

Summary of Qualitative and Quantitative Stage Findings

The data analysis and findings presented in *Chapter IV: Pre-Case Study –*

Analyses and Results aimed to answer a set of qualitative and quantitative research

questions. The following qualitative research questions were addressed: (1) What are the

students' perceptions of the role of CMC in the process of establishing their writing

skills? (2) What patterns of dyadic interaction do participants manifest during the

asynchronous and synchronous CMC interaction process? (3) What are the factors that

influence the CMC pre-writing interaction process? How do these factors influence the interaction process?

With regards to *Research Question 1*, the data analysis suggested that the participants held various views about the role of the CMC pre-writing task: these views encompassed both positive and negative perceptions of the role of CMC and are summarized and discussed further in this chapter. Answering *Research Question 2*, it could be stated that the participants manifested patterns of interaction similar to those that were observed in the face-to-face environment and also reported by Storch (2002). However, emergent patterns of interaction were identified for the CMC environments; more specifically these were mutuality mismatch and task disengagement. Further, answering *Research Question 3,* the data analysis suggested that these patterns of interaction were strongly influenced by the CMC environment in which the prewriting task was completed. The prior task-solving experiences in CMC environments might have influenced the way students perceive and complete discussion tasks in such environments. Finally, the participants who had limited computer skills performed successfully in CMC tasks when computers were used on a regular basis in the classroom and additional support was provided.

The quantitative stage of the study aimed to answer the following research questions: (1) What is the difference in the syntactic complexity present in the post-treatment paragraphs of the students who participated in the synchronous versus asynchronous CMC prewriting discussion? (2) What is the difference in the amount of information present within a single focus of the post-treatment paragraphs of students who participated in synchronous versus asynchronous CMC prewriting discussion? (3) What

is the difference in the quantity of the overall information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC prewriting discussion? (4) What is the difference in the lexical information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC prewriting discussion? (5) What is the difference in the vocabulary complexity present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC prewriting discussion? (6) What is the difference in the rhetorical soundness present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC prewriting discussion (7) What is the difference in the presentation and development of the main point and its support present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC prewriting discussion? (8) What is the difference in the overall language use present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC prewriting discussion?

The data analysis of the proposed eight textual features revealed that not a single one emerged as statistically significant ($\alpha=.05$) when comparing the first-draft writings of the ACMC with the SCMC groups. In other words, no differences could be found for any of the proposed textual measures when the writing outcomes of the ACMC and SCMC participants were compared.

Finally, an *Additional Research Question* was proposed: Do the ACMC and the SCMC modes of the pre-writing discussion influence to a different degree the texts produced after those discussions as measured by matching distinct lexical items? This research question was prompted by the differences in the language production in the two

CMC environments which were revealed by the qualitative data analysis. The researcher aimed to investigate further the influences of the interactions performed during the pre-writing stage on the first drafts.

The results of the data analysis revealed that there was a statistically significant difference (α=.05) between the intertextual connections of the ACMC and the SCMC groups as measured by DLIs. The intertextuality of the participants' writings and their pre-writing discussions was stronger for the post-treatment (first draft) writings of the ACMC group participants as compared to the writings of the participants in the SCMC group. In the following sections, the above findings are presented in detail and discussed.

The Qualitative Stage Findings: Discussion

Participants' Views on the Role of the CMC Pre-writing Task

In the interviews conducted during the study, most of the students shared a perception of the pre-writing task preformed in a CMC environment as being supportive for their first-draft composition. They specified that the task provided them with the opportunity to share ideas, understand better the topic of the written assignment, refer to the discussion during the composition of their first drafts, notice their mistakes when reviewing the pre-writing postings, and use their own and their partners' ideas in the first draft. These findings add to previous research of online discussion which specifies that such discussion provides a non-threatening space in which social interaction could support language learning and effective literacy skills practices (Ware & Warschauer, 2006). However, some participants explicitly stated that, in their writings produced after the discussion, they used only their own ideas; interestingly, the majority of these students completed their pre-wring discussions in an ACMC environment and

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demonstrated a dominant pattern of interaction. Thus, it appears that the specific characteristics of the CMC environment in which the interaction takes place, namely the mode of the CMC interaction along with the dyadic pattern of interaction in which the partners engaged, influenced to some extent students' perception of the pre-writing task.

In addition, students' views on the writing process itself may have influenced the way they engaged in the pre-writing task. Some of the participants shared negative views of the pre-writing task that were not related to the CMC environment in which the pre-writing task was performed but were rather related to peer collaboration promoted in the pre-writing stage. The first concern was the lack of teachers' feedback; it was perceived as more valuable than peer opinion during the pre-writing stage. Secondly, some of the participants viewed writing as an individual activity and did not appreciate the requirement of the pre-writing task that they share their brainstorming and consider the ideas of their peers during the pre-writing stage. These findings could inform the pedagogical practices that involve the completion of collaborative writing tasks in a CMC environment. The pedagogical implications are discussed further in this chapter.

As stated above, not all students shared positive opinions about the pre-writing task, and all of these participants demonstrated a dominant pattern of dyadic interaction; in other words, they failed to create a common discussion space with their partners. However, this does not imply that students' opinion about CMC pre-writing interactions was the only factor influencing these interactions, further in this section the additional factors that influenced the CMC interactions are presented and discussed. Although the number of students who shared such concerns and attitudes towards the task was relatively low, it is important to outline the reasons which led them to their unfavorable

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opinions. In addition to the lack of teacher's feedback and the students' view of writing as an individual process, there were concerns related to the CMC environment in which the pre-writing task was performed. Most of these participants felt uncomfortable during the discussion due to its text-based format. These difficulties were related to both developing language and computer skills. The following specific difficulties related to the text-based format of the communication were revealed: (a) the absence of non-verbal cues to stimulate the formulation of ideas, (b) the great amount of time needed to express ideas in writing as compared to oral communication, (c) the limitations of text-based discussions posed by underdeveloped typing skills, and, finally, (d) the preference of using hand-writing rather than the computer. These students' views align with previous research which interprets new literacies as a complex collection of skills that shape contemporary literacy practices (Simpson, 2005; Warschauer, 1999) and call for careful planning of CMC use in learning environments while supporting the development of new literacy skills.

CMC Mode Influences on Pre-writing Interactions

    Language use. The pre-writing interaction data revealed different language production in the two modes of communication. The ACMC interactions resulted in fewer postings (M=5), but longer strings of words between end-of-sentence punctuation marks (M=12.66), which were often organized in complete sentences. The SCMC discussions, on the other hand, consisted of dynamic and multiple postings (M=46.46), much higher in number than the postings of the ACMC group. The number of words used in the two modes of CMC also differed; the SCMC group participants produced a higher mean number of words (M=410.46) and a higher mean number of distinct lexical items

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(M=92.15) as compared to the ACMC participants with means respectively 272.76 and 66.23. (The descriptive statistics of the pre-writing discussions are presented in Table 4.1).

It could be argued that because the ACMC participants were more likely to post messages which tended to emulate a paragraph on the assigned topic, they might have used vocabulary strictly related to the topic, while SCMC participants' engagement in postings which resembled a conversation, may have resulted in multiple turns related to the task completion process rather than to the specific topic assigned for discussion. Although in the current research project, the nature of the lexis used in the interactions was not further analyzed in terms of its relations to the discussion topic, these findings could be interpreted in light of the findings reported by Smith (2003). He found that about one-third of the entire SCMC task-based interaction of language learners was devoted to negotiation directly related to the task while the rest of the interaction exchange was directed towards collaborative progression through the communicative task. This standpoint was further supported by the findings of the quantitative stage of the study (discussed later in this chapter). Future research that compares task-based interactions performed in the two CMC environments would shed more light on the particular issue of the relation of lexical connections established in ACMC and SCMC environments with the task topic.

The language use differences presented above suggest that the participants engaged in the task differently. It could be argued that the participants were completing the task in two different ways: through collaborative idea generation (promoted to a stronger extent by the SCMC environment) and through individual idea organization and

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refining (presented more visibly in the ACMC environment), possibly, but not necessarily, followed by peer feedback. Thus, two sub-stages of the pre-writing stage could be proposed: an initial sub-stage of peer idea generation followed by a more advanced sub-stage of individual idea refining and organization.

Patterns of dyadic interaction. The patterns of dyadic interaction were influenced by the CMC environment as well. When the pre-writing was completed in an SCMC mode, the interactions were more collaborative in nature, as compared to the ACMC interactions. When performing the pre-writing task in an SCMC environment, the participants tended to recognize their partners' presence and contribution to the discussion and attempted to interpret together the images related to the task. They were more likely to demonstrate high degree of mutuality and equality. There were more instances of dominant patterns when the pre-writing discussion took place in an ACMC environment; thus, the mutuality of the ACMC dyadic interactions was lower (see Table 4.2 for the distribution of the dyadic interaction patterns in the two groups).

In addition, the CMC environment prompted a dyadic pattern mismatch when one of the participants would engage in the discussion assuming a high level of mutuality, while the other would assume a low level of mutuality. In other words, the latter would be concerned mainly with his or her own ideas while the former would show stronger intention to share and discuss ideas related to the task. Based on the data, it seems that the learners were more likely to demonstrate such a mismatch in an ACMC environment. Finally, some of the ACMC participants preliminarily disengaged from the task after completing their posting. They did not revisit the discussion space to post additional messages or reply to the ones posted by their partners. This suggests that they were

focusing on task completion through posting and answering the task requirements rather than through the creation of collaborative discussion on the topic. Interestingly, no such disengagement was observed in the SCMC dyads.

The differences in the dyadic patterns of interaction, the existence of pattern mutuality mismatch, and the instances of task disengagement during CMC interactions reveal additional dimensions of the interactions performed in ACMC and SCMC environments. It could be argued that the dominance of the interactions, the mismatch, and task disengagement observed mainly in the ACMC interaction might have been caused by the text-based nature of the task and further enforced by the space- and time-independence of ACMC. In this environment, the participants engaged in a time-delayed interaction which may have caused them to neglect their partners' contributions at the expense of task completion. Thus, as Sotillo (2000) suggests, the ACMC mode prompted interactions that resembled more teacher request and student response type of communication exchange. In this study, due to the lack of teacher's involvement in the task, the ACMC dynamics shifted to higher consideration of task requirements rather than peer response. Further, it could be argued that the immediacy of the SCMC interactions and their resemblance to face-to-face conversations pointed out in previous research (Jepson, 2005; Smith, 2003; Sotillo, 2000; Warschauer, 1996) may have promoted the higher collaboration and consistency of mutuality of the SCMC interactions.

It is important to point out that mutuality mismatch was not reported in Storch's research of face-to-face interactions (Storch, 2002). However, such mismatch was identified in seven of the dyads, two SCMC and five ACMC. This mismatch could be

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interpreted in the light of Jepson's (2005) findings that text discussion in SCMC mode promotes less negotiation of meaning and repair moves during the language-learning task as compared to voice chat. It seems that in ACMC the level of negotiation is even lower which resulted in more instances of mutuality mismatch. However, considering that the research comparing the dyadic patterns of interaction in ACMC and SCMC environments is limited, it could be expected that future research would shed more light on pattern specifics in such environments and would provide further interpretation on the reported findings.

CMC Task-oriented Experiences

The interviews with the participants revealed that the majority of them had some, in many cases extensive, experience with CMC. These findings were not surprising. Luke (2006, cited in Miller, 2007) noted that today CMC tools are well known by younger generation learners. Considering that the mean age of the students who participated in this study was 25.55, it could be concluded that they belong to this younger generation of learners. This was also confirmed by the fact that only three out of the 60 participants, all three of whom in their thirties and forties, had limited exposure to computers prior to enrollment in the program and thus entered the task-training period of the study with limited computer literacy skills. However, based on the interview data, it was concluded that most of the participants in the study used CMC exclusively for recreational and personal purposes. Only three out of the 60 participants shared in their interviews that they had engaged in CMC communications related to problem-solving professional or academic tasks prior to their enrollment in the intensive English language program. Similar findings were reported by Jin (2007).

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The data collected in this study were not enough to make any conclusions about how this lack of problem-solving CMC experience may have affected the CMC pre-writing interactions. However, the predominant lack of such experience in the targeted population of ESL learners and its effect on CMC language learning task attitudes and participation calls for future research. Taking into account that one of the main goals of intensive ESL programs is to prepare international students for study in U.S. universities in which computers are an integral part of the curriculum, targeting the development of problem-solving skills in text-based CMC environments should be seriously considered in curriculum development. Thus, findings of such research would inform the curriculum design and pedagogical practices of these programs.

Limited Computer Skills Participants

As stated in the previous section of this chapter, it could be suggested that the population of learners who enroll in intensive language programs in general may have acquired computer literacy prior to their enrollment in such programs. Most of the participants in this study who were perceived to be a representative sample of intensive program ESL learners' population (as stated in Chapter III) were familiar with computers and used computers on a daily basis for various purposes, including communication. However, as the qualitative data analysis showed, in this population, there might be learners who have limited or no computer skills. In the current study, three of the participants had considerably more limited computer skills as compared to the majority of the students who participated in the study. All of them were older than the majority of the participants, being in their late thirties or early to mid-forties. They benefited significantly from the consistent use of computers during the language learning process

and the extracurricular support offered for their computer skill development in the form of workshops. All three expressed overall positive attitudes towards the task and two of the participants demonstrated ability to engage in a collaborative ACMC discussion during the pre-writing task completion. It could be argued that the systematic exposure to various computer applications including the CMC applications used in the study prior to the pre-writing allowed them to gain skills that supported their successful performance in a CMC environment. Thus, as stated in the previous section, computer skills development calls for careful consideration in the intensive ESL programs curriculum design and pedagogical practices.

<div align="center">The Quantitative Stage Findings: Discussion</div>

<div align="center">*ACMC and SCMC Groups: Comparison of Textual Features*</div>

The following textual features were considered for statistical analysis when the first drafts of the participants who performed the pre-writing tasks in ACMC and SCMC mode were compared: (1) the syntactic complexity (measured by calculating the mean length of t-units), (2) the amount of information present in a single focus (measured by mean length of idea units), (3) the quantity of overall information present (measured by the number of idea units), (4) lexical information per clause (measured through lexical density analysis), (5) vocabulary complexity (measured by analyzing the frequency of the unique words used), (6) rhetorical soundness, (7) presentation and development of main ideas, and (8) overall language use (the last three criteria were assessed using a multiple trait rubric). These features addressed textual aspects of surface and deep level (Grabe & Kaplan, 1996). The ANCOVA analysis of these textual features, with alpha = .05, showed that there was no difference between the two groups. It is possible that the

differences in the proposed textual features that could be contributed to the dissimilarity of the pre-writing mode of communication were too subtle to be detected considering the small sample size of the study. In addition, there is a possibility that the students used their pre-writing discussion logs when composing their first drafts to a different extent and in a different manner. Possibly a study that involves a higher number of participants and/or addresses the strategies related to the use of their pre-writing discussions during the first-draft composition could reveal more insight into the matter. However, the differences between the pre-writing discussions in the two CMC environments call for further examination of the influence of the pre-writing task on the first-drafts.

Because of the lack of possibility to obtain data from a larger sample or collect additional interview data, the researcher decided to explore a different aspect of students' post-treatment writings. Thus, the intertextual relations between the pre-writing discussion and the first draft were addressed. This examination was performed through a quantitative analysis of the intertextual connections on a lexical level as well as through conducting eight Extreme/Deviant instrumental case-studies aimed at providing insight into the intertextual relationship on various levels.

Comparison of Lexical Intertextual Connections

The influence of the pre-wring discussion on the first paragraphs was statistically analyzed applying a *t*-test. This analysis revealed that there was a statistically significant difference ($\alpha = .05$) between the ACMC and SCMC group participants in terms of pre-writing discussion and first draft lexical intertextual connections. The participants who conducted their pre-writing discussions in an ACMC mode were more likely to use lexical items from the discussion as compared to the SCMC participants.

These results could be interpreted in the light of the Qualitative stage findings reported earlier. The extent to which the pre-writing interactions influenced students' first drafts seem to be grounded in the specifics of the language produced during the pre-writing stage in both CMC environments. The ACMC interactions were task- rather than interaction-oriented; they resembled more advanced steps of the writing process such as outlining and first draft production. This resemblance could have made it easier for the participants to incorporate the vocabulary of their ACMC discussions into their first drafts. Further, taking into account the high interactivity of the SCMC postings revealed in the qualitative stage and the findings reported by Smith (2003) that the high interactivity may pose limitations on task focused SCMC discussions, it could be argued that this higher interactivity of the SCMC discussions influenced negatively the intertextual connections on a lexical level. These connections were restricted by the production of fewer vocabulary items that were inherent to the task and thus could be readily used in the first drafts.

However, the researcher realizes that such influences may not affect all participants and might vary with different levels on intertextual connections. Thus, in order to reveal how the CMC discussions conducted during the pre-writing stage influence the first-draft writing, the intertextual relationships were examined further in a qualitative manner via eight instrumental case studies. In these case studies, a line-by-line comparison of the CMC pre-writing interactions and post-treatment paragraphs of selected participants was performed. The summary and the discussion of the findings of these case studies are presented in the following section of the current chapter.

Instrumental Case Study Findings: Summary and Discussion

The eight participants in the instrumental case study were selected from the Qualitative/Quantitative stage participants using purposive Extreme/Deviant sampling technique (Kemper et al., 2003). Thus, participants who showed the highest and the lowest gains on the first drafts they composed after the CMC discussions were selected. The specific research questions addressed in the case studies were as follows: *Research Question 1:* How do peers participate in asynchronous and synchronous pre-writing CMC interactions? *Research Question 2: (a)* How do they use the specific ideas and language generated during these interactions in their writings? *(b)* What are the differences and similarities in the implementation of these ideas?

Participation in Pre-writing Discussion

The analysis of the eight case studies presented revealed that the learning context within which the assigned task was situated and the environment in which the pre-writing interactions took place influenced multiple aspects of the pre-writing process. The participants were influenced by the mode of communication. The actors who participated in the pre-writing interaction in an ACMC environment, regardless of their gains, failed to create a common discussion space with their partners. Their participation in the task was somewhat one-sided as they appeared to be more concerned with their own postings and failed to respond to each other in a collaborative manner or failed to respond at all. On the other hand, the postings of the actors who participated in the pre-writing task using SCMC were more interactive. This higher interactive mode of discussion was evident with all four of the SCMC actors, even with the one who demonstrated a dominant dyadic pattern of interaction and preliminarily disengaged from the discussion.

These observations of the influence of the environment within which the communication took place were consistent with Sotillo's findings (Sotillo, 2000) about the nature of learners' interaction used in the two CMC modes. In addition, Storch's observations of face-to-face language learner interactions (Storch 2002), namely that the dyadic patterns of interaction were predominantly collaborative, were not transferable to an ACMC environment in these particular cases; however, the tendency for collaborative patterns of interaction was observable in the cases in which the interaction took place in an SCMC environment. This influence of the mode of communication could be attributed to the immediacy of the SCMC interaction and time- and space-distance of the ACMC interaction.

All actors who engaged in the pre-writing task in an SCMC environment, even the one who disengaged early from the task, posted multiple short messages and participated in the discussion, interactively recognizing the presence of their partners. On the other hand, the high-gain ACMC actors addressed the task in one long message after which they and their partners did not resume their postings. In addition, the low-gain ACMC actors exchanged several shorter messages (however, still longer and fewer in number than the messages of the SCMC actors), but, despite the exchange of multiple messages, either they or their partners failed to recognize the other's contributions or respond to the partner's questions.

The communication environment was not the only aspect of the pre-writing interaction that influenced the discussion. The amount of information that the actors contributed to the discussion was connected to the dyadic interaction pattern for the SCMC actors and to the writing gain for the ACMC actors. The high-gain ACMC and

SCMC actors were the ones who contributed more, as compared to the low-gain actors with the exception of the collaborative low-gain SCMC actor, who contributed a comparable amount of information to the high-gain actors. Thus, the high involvement in the pre-writing task in terms of information contributed during task completion might have supported the first draft writing outcomes of the high-gain participants. On the other hand, the SCMC mode supported the creation of common discussion space and provided opportunities for more active and collaborative discussion exchange of both high- and low-gains actors.

It seems that in the SCMC environment, once the actors were involved in (as opposed to disengaged from) the task, the immediacy of the communication supported the interaction, providing a common space in which partners' postings were recognized and answered. It also allowed for resolving misunderstandings and problems that arose during their communication. The students were able to control the task and to collaborate guiding each other through the task completion. Similar findings regarding the dynamics of SCMC were reported by Sotillo (2000) and Shin (2006). On the other hand, the time- and place-independence of the ACMC exchange may have impeded the interactive, and thus collaborative, manner of task completion. In addition, the time- and place-independence of the ACMC interaction allowed the high-gain ACMC actors to attain in more detail to the task; they were able to address multiple aspects of the task and reach for additional support during the task completion such as dictionaries and help from other individuals. However, once the high-gain actors sent their messages, they seemed to perceive the pre-writing task to be completed. Wang (1996) reports similar findings in a study of e-mail journaling in an ESL classroom.

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The nature of the pre-writing task called for collaborative brainstorming and consideration of the partner's contribution. The attempts of the ACMC actors and their partners to engage into a discussion failed. This failure might be attributed to neglect of the partner's contribution or early disengagement from the task. In addition, the challenges of the text-based communication environment, such as slower reading and writing (including typing) in the target language and lack of non-verbal communication cues combined with the time delay of the interaction, might have influenced negatively the ACMC pre-writing discussions.

The Influence of the Pre-writing Discussion on the First Drafts:

Differences and Similarities

The intertextuality approach adopted in this study was based on the view that all texts present a part of a wider textual network (Allen, 2000). The researcher's belief is that addressing intertextuality of learners' writings within the context of the writing process could support the understanding of the text composition development of language learners. Further, with regard to collaboration, whose role is perceived to be significant in the writing process (Ferris, 2003; Liu & Sadler, 2003; Abbott, 1989; Ferris & Hedgcock, 1998), the results of intertextual analysis might reveal more specifics of the intertextual connections established during the writing process. Thus, the analysis of the intertextuality between the pre-writing discussions and first drafts would shed light on the progression of the writing process from the pre-writing stage to the first draft. The current study disclosed that participants differed with respect to the degree to which they manifested intertextual connections on the lexical, idea unit, and organizational levels.

The ACMC high-gain actors demonstrated stronger lexical intertextuality, as compared to the low-gain ACMC actors and the SCMC actors, regardless of their gains. The stronger intertextual connections that the high-gain actors established in their writings could be attributed to the detailed nature of their pre-writing postings and to the fact that the asynchronous nature of the interaction allowed them enough time to reference dictionaries and use outside help. In these postings they were able to find or recall the appropriate vocabulary and use it to articulate the main points related to their writing and follow those in their first drafts. Therefore, for these actors the ACMC mode of communication provided more opportunities for the construction of detailed postings using words which would not necessarily be part of their immediate active vocabulary that they would use in a fast-paced interaction (e.g. face-to-face or SCMC).

The intertextuality on the idea-unit level showed differences that were related to the mode of communication. Based on the comparison of the idea units of the pre-writing interactions and the post-treatment paragraphs, the ACMC actors, regardless of their gains, were more likely to establish high-level intertextual connection. In other words, there was a stronger tendency to borrow verbatim pre-writing discussion idea units or compose draft idea units that were closely related to those from the discussion. On the other hand, the SCMC actors were more likely to establish medium- and low-level intertextual connections – they applied more extensive rephrasing techniques or composed new idea units based on information shared during the discussion. This difference between the ACMC and the SCMC actors could be attributed to the nature of the language produced during the pre-writing interactions in the two communication environments. While the ACMC actors posted longer and mostly complete sentences

during their pre-writing interaction, the SCMC actors' postings contained incomplete utterances and phrases. Thus, it could be implied that the ACMC actors were prompted by the asynchronous nature of the communication to compose messages that were closer to their actual first-draft writings. It seems that, when composing their first drafts, they relied both on information and specific language structures shared during the pre-writing exchange. On the other hand, the SCMC pre-writing discussion, due to its dynamic and fast-paced nature, provided the means for the collaborative generation of ideas but allowed for less time to compose complete chunks of language that could be readily used in a subsequent draft. Consequently, the environment in which the pre-writing task completion took place seemed to stretch its influence to the first draft stage.

The rephrasing strategies the actors applied when transferring idea units from the pre-writing discussion to their post-treatment paragraphs differed based on the gain level rather than CMC mode. The high-gain actors demonstrated stronger ability to move beyond the single idea unit when rephrasing, either splitting one idea unit from the discussion by developing two or more idea units or merging two idea units into one. On the other hand, the low-gain actors stayed within the boundaries of the pre-writing idea unit which they attempted to rephrase. Thus, the high-gain actors demonstrated a stronger ability for further manipulation and polishing of the language produced during the discussion.

The actors who used a collaborative pattern of pre-writing interaction, all of whom were SCMC actors, showed stronger consideration of their partners' contributions. In addition, the two high-gain SCMC actors (both of them engaged in collaborative discussions with their partners) showed the highest consideration of their partners'

contributions when composing their first drafts. This may suggest that in these cases, the dyadic pattern of pre-writing interaction which resulted from the exchange of ideas in a mutual problem-solving space was traceable in the first-draft writings of the SCMC actors and might have provided stronger support to the composition process.

The third level of intertextual connections examined in the case studies presented in this chapter was the organizational level of intertextuality. At this level, the intertextual connections were the weakest. For three of the ACMC actors and one SCMC actor (regardless of gain level) they were somewhat traceable. The rest of the actors did not show any intertextual connection at this level, and the paragraph organization was either not addressed in the pre-writing discussion or the suggestions were neglected in the actors' first drafts. It could be argued that it might have been too early in the writing process for the participants to decide on future paragraph organization during the pre-writing stage and follow on these decisions without implementing any changes in their drafts. However, the data suggest one more reason for the weak intertextuality on the organizational level. Four out of the eight participants entirely neglected this aspect of the task in their pre-writing discussions. This suggests that it might have been challenging for these actors and their partners to address the paragraph organization along with the picture interpretation and topic discussion within the same CMC pre-writing session. Thus, the pre-writing stage appears to be a complex phase of the writing process. This phase requires multiple steps in order to address the various aspects of the text to be composed afterwards. These findings confirmed the pedagogical suggestions of Grabe and Kaplan (1996), such as brainstorming, class and group discussion, and peer response.

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Finally, all of the actors, with the exception of one low-gain ACMC actor, continued the generation of ideas past the pre-writing stage. In their first drafts, they composed new idea units that presented new topics not addressed in the discussion. I would argue that the pre-writing discussions set general blueprints for the future first drafts which were further developed and modified.

Implications for Further Research

The understanding of writing as a process rather than a product has reshaped the way researchers and practitioners in the field of SLA approach writing (Grabe & Kaplan,1996; Hyland & Hyland, 2006a). In addition, the recognition of the strong influences of social environments on this process offered new venues for research that informed the pedagogical practices in the second language classroom. Peer and student/teacher interactions remain in the focus of writing research for more than a decade now (Ferris, 2003; Grabe & Kaplan, 1996; Hyland & Hyland, 2006a,b). However, while the stages of the writing process were recognized and described (Grabe & Kaplan, 1996), most of the research has been focused on revising and editing which are the later stages of the writing process. In the field of SLA, there is a limited body of research on the first two stages of the process: pre-writing and drafting. Thus, more research that would address the specifics and dynamics of these stages of the writing process is warranted.

Based on the outcomes of the exploratory research project presented in this volume, a number of topics that would shed more light on the pre-writing and drafting stages and their relations could be suggested. Multiple questions await to be addressed in future research. How do students progress through these first stages of the process? What

is the role of peer collaboration and of teacher involvement during the pre-writing and drafting stages? How do students perceive and participate in peer interactions during the pre-writing stage? What is the teacher's role in these early stages of the process? How do the students benefit from different pre-writing tasks such as individual and group brainstorming, mapping, and outlining? Are these tasks interchangeable or could they support a specific sub-stage of pre-writing? How could language acquisition in terms of vocabulary and specific grammar forms be supported in the pre-writing processes and further transferred to drafting? How could writing skills development in terms of text organization, rhetorical soundness, and reader consideration be supported at these stages of the writing process?

In addition, the active inclusion of new technologies into the language learning process poses additional issues for future research in the context of the writing process. The role of computer mediated interactions and the specifics of these interactions in different modes during the first stages of the writing process could be addressed. The current study showed that there were significant differences in the dyadic patterns of interactions in the two modes. Further research is needed in order to attend to the specifics of these differences and their relation to the mode of the computer mediated communication, students' computer skills and previous experiences with computer use in problem-solving tasks. Accounting for the text-based nature of the computer mediated communication, this study addressed the intertextual connections between the pre-writing discussions and the first drafts of language learners; in future research, it could be instrumental to attend in more detail to the degree and the specifics of language transfer that takes place in the early pre-writing stages.

Taking into account the exploratory nature of this study, the results do not allow to establish any definite conclusions about the collaborative and composition practices that take place during the early stages of the writing process. However, it addressed multiple aspects of these stages such as the dynamics of peer interactions in CMC environments and intertextual connections between pre-writing discussions produced in such environment and first drafts. These aspects could be re-addressed in future replications of the study or its parts.

<div align="center">Pedagogical Implications</div>

Although pre-writing and drafting stages of the writing process have not been addressed specifically in the SLA writing research or in ESL writing text books, these stages are presented and activities to be completed are suggested. The outcomes of the current research provide some insights on the learning processes which take place in CMC environments during these first stages. These outcomes could further inform the pedagogical practices of writing teachers.

Based on student opinions shared in the interviews, it could be suggested that writing teachers should not assume that learners come ready to engage in writing as a process that entails planning, multiple revisions, peer collaboration, and reader consideration. Thus, the teachers should be ready not only to guide their students through the writing process but also to explicitly address and discuss with the students the process nature of writing and the role of peer collaboration. Similar to the recommendations concerning peer feedback training during the more advanced stages of the writing process (Berg, 1999), the researcher would suggest that ESL learners need training that would support their collaborative participation in pre-writing activities. Further, the results of

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the study suggested that the students value and expect teacher's feedback. When engaged in a pre-writing task that is teacher-controlled to a lesser degree, such as the CMC pre-writing task in this study, learners may lose focus, disengage early from the task without fully addressing all requirements or disregard their partners' contributions. A combination of approaches could be applied in the pre-writing stage – students could brainstorm and discuss the topic assigned in small groups or dyads and when the discussion advances, the teacher could provide additional guidance and feedback. Thus, the pre-writing stage tasks should not be addressed in a one-step manner but rather should incorporate multiple sub-steps such as: (1) task design, (2) introduction of the collaborative pre-writing task performed by the teacher, (3) student interaction during the task completion, and (4) teacher guidance once the discussion advances.

It should be noted that the-prewriting stage is not a homogeneous stage. It has its own sub-stages that should be considered as well when the pre-writing tasks are designed and applied in the writing classroom. The existence of such sub-stages was evident by the way the participants in this study approached the pre-writing task in different CMC environments.

The use of computer mediated discussions can support the collaborative planning and idea generation during the pre-writing stage through its text-based nature and the possibility to accomplish parts of this stage outside the classroom as a homework assignment. However, the writing teacher should carefully consider the mode of the CMC interaction in the design of the pre-writing task. The study revealed that the students participate in the same task completion in a different manner depending on the mode of communication. The interactive nature of the SCMC discussion might be more

appropriate when ideas related to the future writing project are generated, while later, when these ideas need to be refined, ordered, and organized, the ACMC mode of peer collaboration should be considered.

Finally, taking into account the fact that computer-mediated communication has become an integral part of the educational process in U.S. universities and that a major part of writing in academic settings is performed using computers, it is crucial to address the development of new literacy skills of ESL learners in intensive English language programs. An early diagnosis of computers skills might provide valuable information about students' computer proficiency. Along with the language proficiency addressed for placement purposes during the first days of the semester, the level of computer skills development should be also assessed. This would allow administrators and/or teachers to identify students that might need additional help in developing their computer skills. Such students can be provided systematic support through extracurricular workshops and peer or teacher support when computer-based activities are assigned. When designing the CALL curriculum of intensive English language programs, it should be taken into account that although the majority of the students that enroll are younger and have been exposed to various uses of computers in their every-day life, many of them have not used computers for academic purposes.

Limitations of the Study

Limitations of the Quantitative Stage

The main limitation of the statistical tests reported in the quantitative part of this chapter was the sample size – the results of only 30 pairs were examined. Considering that the development of writing skills detectable on the surface (vocabulary, syntactical

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complexity) and on deep textual levels (presentation and development, overall language use, rhetorical soundness) is a long process, it could be inferred that the progress is pronounced over a longer period of time and statistically significant results could not be detected when examining a small sample. With a larger sample size, a difference between the groups could become more visible. Further, although all efforts were made to control the conditions under which the treatment was administered, the participants had been exposed to different teaching styles during the pre-treatment period, and this could have affected their performance. Another limitation is that some of the participants perceived writing as an individual activity (as shared in the interview) perhaps leading them towards intentional neglect of the outcomes of the pre-writing discussion when composing their first drafts; however, due to the small sample size it was impossible to control this variable.

It is important to state some of the limitations of the additional analysis as well. The main one is that single lexical items (rather than idea units) were considered: the assumption that they present identical or similar ideas may not always be true. However, despite this limitation, the researcher decided to conduct the *t*-test on the matching DLI ratio scores and to report the findings in order to consider them when discussing the results of the qualitative analysis of the CMC pre-writing discussion and post-treatment writing intertextual relationship. The second limitation of this analysis is the fact that it was based solely on the matching DLI ratio scores. This limitation was imposed by the small sample size (n=30); if a larger group of participants were involved in the study, more powerful inferential statistical tests could be used to possibly reveal additional dimensions of the intertextual relationships considering more dependent variables such as

total number of unique words in each discussion and paragraph, DLIF of CMC

discussions and paragraphs, lexical density, etc.

<p style="text-align: center;">*Limitations of the Qualitative Stage*</p>

The study had several limitations identified by the researcher during the design and

implementation stages. These limitations concern study design as well as the instruments

used in the study. Each of the limitations identified by the researcher is discussed below.

The first limitation refers to the observation frequency; a closer systematic

observation of all Level III Writing sections participating in the study would provide the

researcher with richer and more detailed data about processes of computer and writing

skills interaction. More extensive observations of both face-to-face classes with recorded

dyad face-to-face interactions would also allow the researcher to infer with more

confidence how CMC dyadic interactions are related to the face-to-face patterns of

interaction.

The interview mode used in the current study was CMC. This mode of interaction

provided the researcher and the participants with a higher degree of flexibility and

allowed reaching more participants for interviews. However, the researcher found that

this interview mode actually impeded the application of follow-up and clarification

questions. Most of the attempts to ask such questions were ignored by the participants. In

addition, the interview could include questions related to the trends identified in the CMC

interactions. This was not achieved in the current study: due to the large body of

qualitative data, the researcher could not complete the data analysis before the end of the

semester. In addition, this particular study focused on one CMC pre-writing activity; a

longitudinal study with more than one round of CMC interactions performed at different

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points during the semester could provide more insights about how students develop their writing skills.

Finally, the researcher would consider the use of a different SCMC application. Although L.E.C.S. – the application used for this particular study – had the advantage of being fully web-based and allowed the teachers and the researcher direct access to each interaction during and after the discussion, it had certain weaknesses in terms of interface design and transmission of postings. These differences affected the display of the chat and limited the analysis of the SCMC chat data.

Limitations of the Instrumental Case Studies

The main limitation of the instrumental case studies presented in this research project was that the participants were chosen after the data collection was completed. This posed certain restraints on the richness of the qualitative data. More specifically, the researcher did not have access to the participants after the data were analyzed in order to obtain clarification and further explanation about trends revealed in the data. The late selection of the participants also imposed limitations in terms of face-to-face and computer class observations, which could be instrumental in identifying additional trends or addressing in more depth trends that were already observed. However, considering the instrumental nature of the case studies, the researcher perceived that, despite of the limitations presented above, the findings reported as a result of the data analysis provided valuable insights related to the writing processes under investigation. These findings could be further addressed through in-depth longitudinal case studies.

Conclusions

This study aimed to address a gap in the SLA writing research: it examined processes occurring during pre-writing stage of L2 learners' writing when CMC pre-writing activities were involved. More specifically, in the quantitative stage, the researcher analyzed and compared various textual features of students' first draft writing completed after a CMC pre-writing discussion task. While no differences were found with regard to those features when the ACMC and the SCMC groups were compared, the combination of quantitative and qualitative analysis allowed the researcher to focus on additional textual aspects of students' first drafts leading to the conclusion that the CMC mode in which the pre-writing discussion was completed influenced differently students' first drafts on the lexical level.

The completion of a pre-writing task in a CMC environment and the intertextual connections existing between the pre-writing dyad discussions were in the focus of the group case study and the subsequent collection of eight instrumental case studies. Several aspects related to the pre-writing and drafting stages of the writing process were examined: (1) students' views on writing and their relation to task participation, (2) students' views on pre-writing tasks completed in CMC environments, (3) patterns of interaction used during the CMC pre-writing task completion, and (4) intertextual connections between the pre-writing dyad brainstorming and planning and first drafts. The results of this study confirmed previous research findings related to CMC discourse produced in second language educational environments. In the analysis, the researcher also took into account students' patterns of interactions, students' views on CMC tasks, and textual specifics of language produced in ACMC and SCMC modes of

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communication. In addition, in this research project, the interactions and intertextual connections of high and low gainers were compared and similarities and differences were highlighted. Finally, new patterns of interaction, which differed from the patterns of face-to-face interaction reported in previous research, were identified for CMC environments. The researcher believes that this study provides insights that would broaden the understanding of the development of second language learners' writing skills and would inform computer assisted second language writing instruction.

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APPENDICES

Appendix 1 A: Intermediate Academic Writing Course: Goals and Objectives

ACADEMIC WRITING III

COURSE DESCRIPTION:

This course focuses on developing academic writing skills. Topics with a cultural focus

provide the stimulus for writing assignments. Students will review sentence types, focus on

paragraph development, and begin working on essay development in this course.

COURSE GOALS:

1. Students will read passages and use them as the basis for writing.

2. Students will review different types of sentences to prepare them for paragraph writing.

3. Students will be exposed to a variety of academic writing styles and patterns.

4. Students will express ideas or opinions based on the readings orally and in writing.

COURSE OBJECTIVES: By the end of the course, students will be able to

1. Write simple, compound, complex, and compound-complex sentences.

2. Write well-structured coherent paragraphs with a topic sentence, support, and a

conclusion.

3. Read an article or story and write a short summary or paraphrase.

4. Write a process report.

5. Write a paragraph of extended definition of a term used in their field of study.

6. Write multiple paragraphs using a variety of rhetorical patterns, including a paragraph

comparing/contrasting two graphs and a paragraph illustrating cause/effect using an academic

field case study.

7. Expand a paragraph into an essay.

8. Write fully developed paragraphs on given topics within given time limits.

9. Write one in-class essay.

10. Edit writing for correct grammar, punctuation, capitalization, and transitions.

11. Use library sources to identify, locate, and gather data for use in their writing.

12. Narrow a topic after brainstorming and organize into outline form.

13. Summarize, paraphrase, and cite information gathered through library sources.

CALL OBJECTIVES:

1. Students will become familiar with the procedures for accessing ELI software and Web sites on the Internet.

2. Students will improve their writing skills through the use of grammar, writing, and spelling software and through Web sites located on the Internet.

3. Students will become familiar with Web LUIS and Internet searches as sources of facts in the research data gathering process.

4. Students will share ideas and opinions in writing through e-mail exchanges and on-line chats with their classmates and instructor.

CALL sources for Academic Writing III: Microsoft Word, Grammar 3D, Web LUIS, Web sites on the Internet, Yahoo Messenger, e-mail.

Appendix 1 B: Comprehensive English Language Test (CELT)

Grade Range: High School through Adult
Administration: Individual or Group
Time: Approximately 2 hours 15 minutes

The *Comprehensive English Language Test (CELT)* has earned an excellent reputation as a valid and reliable instrument for measuring English language proficiency for English as a second language (ESL). It is especially appropriate for high school, college and adult ESL programs at the intermediate and advanced levels.

- *Features and Benefits*

Listening, Structure and Vocabulary tests measure important dimensions of second language learning. Each section is of sufficient length to yield reliable results.
Authors are experienced test writers in the field of ESL.

All items were pretested on large samples of students of diverse language backgrounds enrolled in intensive, college-level and high school ESL programs.

- *Normative Information*

Student Percent-Correct Scores may be referenced against normative data for several reference groups:

- Foreign students admitted to an American university ESL program;
- Adult ESL students attending a language upgrading program in a community college;
- Francophone ESL students from Quebec;
- High school ESL students;
- Adult ESL students in an intensive language institute;
- Adult non-native speakers accepted for academic work.

Components

The *Examiner's Instructions and Technical Manual* contains instructions for test administration, a discussion of the procedures used in developing parallel forms, and norms for six different reference groups.

Appendix 1 B, Comprehensive English Language Test (CELT) (cont.)
Separate, reusable *Test Books* for each of Forms A and B contain all three sections of the

test. Two parallel forms may be administered in alternate years for placement purposes or

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as entry and exit tests within the same semester.

Answer Keys include built-in table for easy conversion of number of incorrect and

omitted items expressed in a percentage correct score.

C-60 *Cassette* is designed for the Listening section of each form.

Appendix 1 C: The Michigan Test of English Language Proficiency (MTELP)

Advanced proficiency level

The Michigan Test of English Language Proficiency (MTELP) is a 100 item multiple-choice test containing grammar items in a conversational format, vocabulary items requiring selection of a synonym or completion of a sentence, and reading passages followed by comprehension questions.

The MTELP is a retired component of the Michigan English Proficiency Battery, which was used to assess the English language proficiency of non-native speakers of English who wish to pursue academic work at colleges or universities where English is the medium of instruction. This test may be appropriate for advanced secondary school students also, but norms available on the MTELP (see the MTELP Examiner's Manual) pertain only to adult non-native speakers of English interested in college or university study. The test is inappropriate for those with elementary to low-intermediate knowledge of English and for those without a high school education.

Scoring is by punched stencil. Purchasers may use their own scannable answer sheets.

Raw scores can be converted to adjusted scores by using equation tables found in the MTELP Examiner's Manual.

Time: 75 minutes

  3 Forms available: P, Q, R

Appendix 2: ESL/CALL Curriculum Objectives and Activities

CALL	Internet		Software		Word-Processing	
	Culture		L/S		Strategies	
Lower	Objectives	Suggested Activities (S.A.)	Objectives	S.A.	Objectives	S.A.
Level I	1. Demonstrate knowledge of facts about American culture 2. Locate specific information on maps, in pictures, and in directories 3. Read short passages and respond to them in writing.	1. Barbara's culture I activity theodora.com/flags or http://www.1-language.com/worldfactbook2002/index.html • Answer T/F, find their own, check your partner's answers 2. Join Nicenet class • Listen to esl-lab "Introduce Yourself" http://www.esl-lab.com/intro2/intro2.htm • Go into Nicenet and introduce yourself (send a personal message to all) 3. On Nicenet a short passage about American Culture • In conferencing, short t/f questions, click on reply and answer with correct statements (i.e. if false, make it true…)	1. Practice characteristic aspects of consonants and vowels which interfere with intelligibility and communic-ability	• ELLIS • Sound Recorder (dictation, record own voice)	1. Use affixes, word families, and word building to develop and increase their basic vocabulary. 2. Use the learning strategies of scanning, sequencing, classification, and making analogies in order to organize and facilitate comprehension of authentic graphic materials and surroundings 3. Write a paragraph with a title, margins, and indentation	* Crossword puzzles (file, open, save, new, link, hard copy,etc.) * Dictation (typing and navigation) * Follow directions (opening multiple windows) * copy paragraphs (fonts, margins, indents, table space, bold) * scavenger hunt (finding docs, directories, folders, save as) * fill in form * create various uses for Word (labels, envelope, Wizards, letter, memo, fax)
Level II	1. Demonstrate an understanding of cultural references by the acquisition of new words in context. 2. Extract information from a variety of authentic materials, including maps, pictures, and directories.	1. Set up class in Nicenet • On Nicenet write about their first week experience in Tampa and at ELI OR • List of items to discuss (elevators, office, etc.) 2. ELI site find info OR • library hours of operation OR • ELI staff OR • Go to tbo.com and scan for information on Tampa and 'things to do' - Questions provided under Conferencing or Personal Messages and students reply - Compare with your country (Teacher then gives out slips of papers with names on it and students reply to the person that they received) - Find directions from event to the student's home.	1. Practice characteristic aspects of consonants and vowels which interfere with intelligibility and communi-cability	• ELLIS • Sound Recorder (dictation, record own voice)	1. Use synonyms, word parts, and word order patterns to enhance their vocabulary development and to guess meaning from context. 2. Extract information from maps, pictures, and directories. 3. Write simple, compound, and complex sentences. 4. Follow the process of a paragraph to write well-structured paragraphs with a topic sentence, support, and a conclusion.	Level I+ Synonym, word parts, word order (grammar check, thesaurus) • Sentences/order into paragr. (formatting paragraphs) • Follow directions (header/footer, page numbering, renaming/deleting files) • 50 words "Why I like ELI" (word count, from a:// to x:// drive) • Scavenger hunt with help function • Insert tables/graphs/graphics/clip • Using toolbars (parts vs. level) • Access different menus/saving downloads, etc

Appendix 2, ESL/CALL Curriculum Objectives and Activities (cont.)

CALL	Internet		Multiple Applications		Word-Processing	
	L/S * Academic Interaction		Test Prep Elective		Academic Writing * Writing * Research Skills	
Upper	Objectives	Suggested Activities	Objectives	S.A.	Objectives	Suggested Activities
Level III	1. Interpret and answer short-essay questions based on listening passages. 2. Make inferences and understand new ideas from listening passages	1. Sign up for Nicenet/ interview a student, introduce your partner to Nicenet/read the posting about yourself and post any additional information 2. Randall's Cyber Listening Lab ELC or website on a specific theme (i.e. Stress) 3. A three day vacation (weather, activities at destination) follow up present your ideas to other classmates – mingling	1. Prepare for the computer-based exam multiple applications.		1. Write simple, compound, complex, and compound-complex sentences. 2. Identify coherent paragraphs with a topic sentence, support, and a conclusion. 3. Write a process report 4. Edit writing for correct grammar, punctuation, capitalization, and transitions	1. Rearrange (cut/paste) sentences to make a paragraph 2. Spell check, grammar check 3. Create a flyer with text box/graphics for events at the ELI 4. Open two windows on split pane and copy/cut/paste from one to another to create new doc. 5. copy graphic-wrap text around it 6. Each student chooses part of Word and describes how to use it.
Level IV	1. Search WebLuis and internet sources to gather data for an oral presentation. 2. Identify key vocabulary used in the lectures and supplemental academic materials. 3. Identify main or key ideas and important details of a lecture	1. Sign Up for Nicenet Write 3 true and 2 false statements about yourself and post under conferencing. Pair up students and the pairs quiz each other which one is true/false. The partner then reports on the true statements. 2. Library Scavenger Hunt (debrief in class or record findings in sound recorder) 3. News Event (predict/discuss) information from CNN, ABC, FOX with worksheet and debrief	1. Prepare for the computer-based exam multiple applications.		1. Make use of standard rhetorical forms: narration, description, comparison/contrast, cause/effect, and/or persuasion/argumentation 2. Review and edit writing for content and mechanics, including: paragraph structure, rhetorical style, unity and coherence, capitalization and punctuation, transitions, and connectors.	Level III + 1. Give students sentences from paragraphs of different rhetorical styles. Students format and put in order and describe the style. Highlight characteristics, transition markers, etc. 2. Edit some sample paragraphs.
Level V	1. Identify educational opportunities and resources at the University, including the library, computer resources, and support centers 2. Read and understand a schedule of classes. 3. Locate resources, including books, journals, newspapers, and magazines, in the USF library via WebLuis and on site and via the Internet	1. Sign Up for Nicenet Open up sound recorder and record a short introduction about yourself. Save the file and send it via email to your partner. Once you receive your partner's audio file, listen to it and post a summary onto Nicenet. 2. University Scavenger Hunt (university resources, buildings, etc.) 3. Gather information from 2 other universities (select universities based on their needs). Students (in pairs) create worksheets for evaluating the university. Follow up: present their university choices as a poster presentation.	1. Prepare for the computer-based exam multiple applications.		1. Understand bibliographic citations and use them as sources of information for research. 2. Summarize and/or paraphrase journal articles and/or in-field readings related to the topic of the research paper.	Level III + 1. Give bibliographic information and they put in correct formats/templates 2. Write short essay; exchange; insert comments, highlight with color-coding. 3. Create templates for bibliographic entries.

Appendix 3A: Multiple-Trait Rubrics for the Pre-Treatment Paragraph

Writing Prompt: The International Student organization has invited you to write a note for their newsletter. **The topic of your note is:** *My Favorite U.S. holiday.* Based on your personal experience and the pre-writing discussion you had with your partner, write the your first draft of a descriptive paragraph. You will have 30 minutes. **Title:** *My Favorite U.S. Holiday*			
S	**Rhetorical soundness**	**Presentation and development of the main point and its support**	**Overall language use**
6	The paragraph allows the reader to create a full and clear understanding of the writer's favorite US holiday. All statements are well supported with explicit descriptions.	The main idea of the paragraph directly addresses the topic and is stated clearly and succinctly in a logically organized manner. Explicit transitions and/or connectors allow achieving the coherence of the paragraph. Supporting ideas, examples, and/or explanations strengthen the main idea presentation.	Language use is direct, fluid, and generally accurate.
5	The paragraph allows the reader to create a good understanding of the writer's favorite US holiday. However, some of the statements are not supported with an explicit description.	The main idea of the paragraph is related to the topic. The paragraph is logically organized through the use of coherence markers. Explicit transitions and/or connectors allow achieving the coherence of the paragraph. The paragraph contains at least two supporting ideas, examples or explanations that are related to the main idea.	Language control is good; vocabulary use is nicely varied.
4	The paragraph allows the reader to create a sufficiently clear understanding of the writer's favorite US holiday. However, the description is sketchy which does not allow the reader to create a full mental image of the described feelings and/or events.	The main idea of the paragraph is related to the topic but it could be stated in a more clear and explicit way. The paragraph may lack logic or coherence because connectors and transitions are not used consistently and effectively. The supporting ideas, examples or explanations that are related to the main idea are underdeveloped.	Language shows satisfactory but inconsistent control; vocabulary use shows adequate variety.
3	The paragraph allows the reader to create a somewhat sufficiently clear understanding of the writer's favorite US holiday. However, very limited description is provided and this description is not always related to the topic, this does not allow the reader to create a mental image of the described feelings and/or events.	The main idea of the paragraph is only marginally related to the topic or it is difficult to identify. The paragraph does not have a clear organizational structure; coherence is weak due to absent or inappropriate transition signals. The paragraph lacks specific supporting ideas, examples or explanations that are directly related to the main idea.	Language shows inconsistencies that distract the reader; vocabulary shows lack of variety.
2	The paragraph does not allow the reader to create a sufficiently clear understanding of the writer's favorite US holiday due to lack of description that is related to the topic.	The paragraph lacks main idea that is related to the topic. The supporting ideas, examples, or explanations are inappropriate. The text lacks organization and coherence.	Language control is weak and frequently distracts the reader; vocabulary use is highly restricted.
1	Not a ratable sample	Not a ratable sample	Not a ratable sample

Appendix 3B: Multiple-Trait Rubrics for the Post-Treatment Paragraph

Writing Prompt: The International Student organization has invited you to write a note for their newsletter.
The topic of your presentation is: *The People of the United States*.
Based on the discussion you had with your partner using L.E.C.S. or ICA2, write the first draft of a descriptive paragraph that would present the people of the United States and will correspond with the pictures given for the discussion. Make sure to include in your description all the ideas presented by all the pictures. You can use the records of your L.E.C.S. or ICA2 discussion when composing the paragraph. You will have 35 minutes to write this paragraph.
Title: *The People of the United States*.

S	Rhetorical soundness	Presentation and development of the main point and its support	Overall language use
6	The paragraph allows the reader to create a full and clear understanding of the writer's view about the people of the US developed based on the visual prompts given for discussion. All statements are well supported with explicit descriptions.	The main idea of the paragraph directly addresses the topic and is stated clearly and succinctly in a logically organized manner. Explicit transitions and/or connectors allow achieving the coherence of the paragraph. Supporting ideas, examples, and/or explanations strengthen the main idea presentation.	Language use is direct, fluid, and generally accurate.
5	The paragraph allows the reader to create a good understanding of the writer's view about the people of the US developed based on the visual prompts given for discussion. However, some of the statements are not supported with an explicit description.	The main idea of the paragraph is related to the topic. The paragraph is logically organized through the use of coherence markers. Explicit transitions and/or connectors allow achieving the coherence of the paragraph. The paragraph contains at least two supporting ideas, examples or explanations that are related to the main idea.	Language control is good; vocabulary use is nicely varied.
4	The paragraph allows the reader to create a sufficiently clear understanding of the writer's view about the people of the US developed based on the visual prompts given for discussion. However, the description is sketchy which does not allow the reader to create a full mental image of the author's view on the topic.	The main idea of the paragraph is related to the topic but it could be stated in a more clear and explicit way. The paragraph may lack logic or coherence because connectors and transitions are not used consistently and effectively. The supporting ideas, examples or explanations that are related to the main idea are underdeveloped.	Language shows satisfactory but inconsistent control; vocabulary use shows adequate variety.
3	The paragraph allows the reader to create a somehow sufficiently clear understanding of the writer's view about the people of the US developed based on the visual prompts given for discussion. However, very limited description is provided and this description is not always related to the topic, this does not allow the reader to create a mental image of the author's view on the topic.	The main idea of the paragraph is only marginally related to the topic or it is difficult to identify. The paragraph does not have a clear organizational structure; coherence is weak due to absent or inappropriate transition signals. The paragraph lacks specific supporting ideas, examples or explanations that are directly related to the main idea.	Language shows inconsistencies that distract the reader; vocabulary shows lack of variety.
2	The paragraph does not allow the reader to create a sufficiently clear understanding of the writer's view about the people of the US developed based on the visual prompts given for discussion. due to lack of description that is related to the topic.	The paragraph lacks main idea that is related to the topic. The supporting ideas, examples, or explanations are inappropriate. The text lacks organization and coherence.	Language control is weak and frequently distracts the reader; vocabulary use is highly restricted.
1	Not a ratable sample	Not a ratable sample	Not a ratable sample

Appendix 3B, Multiple-Trait Rubrics for the Post-Treatment Paragraph (cont.)

*The Rubrics listed in Appendix 3 A & B were designed closely following paragraph rating scale and multiple trait scoring guide presented by Ferris and Hedgcock (1998). This would increase the criterion related validity of the instruments.

Task ACMC -- Nicenet

You will be asked to write a descriptive paragraph about the people of the US. To prepare for this writing assignment, you will brainstorm and plan with your partner using Nicenet. You and your partner have six pictures presenting specific ideas about the topic. Together you need to:

    (1) Discuss what ideas you should include in a paragraph that describes the people of the US and includes the ideas represented on the six pictures.

    (2) Discuss the paragraph organization, main and supporting ideas, and topic sentence.

Note: It is important to participate actively and regularly in the discussion via Nicenet during the whole discussion period: starting today and completing the discussion either Monday night or Tuesday morning. Please discuss the pictures ONLY with your partner and ONLY on Nicenet.

This assignment is due on Tuesday.

Task ACMC – L.E.C.S.

You will be asked to write a descriptive paragraph about the people of the US. To prepare for this writing assignment, you will brainstorm and plan with your partner using L.E.C.S. You and your partner have six pictures presenting specific ideas about the topic. Together you need to:

    (1) Discuss what ideas you should include in a paragraph that describes the people of the US and includes the ideas represented on the six pictures.

    (1) Discuss the paragraph organization, main and supporting ideas, and topic sentence.

Note: It is important NOT TO talk about the pictures with anybody. Please discuss them ONLY with your partner and ONLY on L.E.C.S.

This assignment is due in 50 minutes.

THE PEOPLE OF THE UNITED STATES - 1
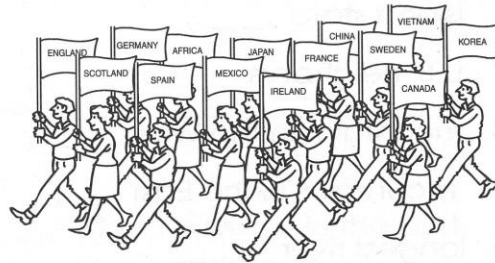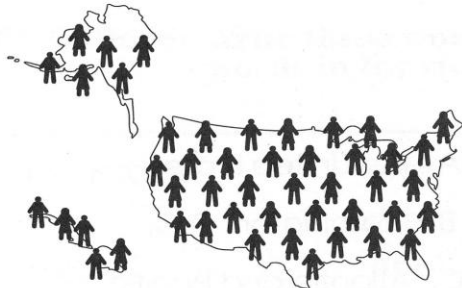
English as a World Language

ELI, Intermediate Writing Class

Activity designed by Raymond Cepko

Read the following text and decide if you agree with the **author's point of view** or not. Then go to the conferencing section and post your response under agree or disagree. After you have finished posting your response, read what other students had to say and comment on them. Then go back to your post and see what responses you received. (NOTE: When replying to another students message, be sure to hit the *REPLY* button.)

It is widely believed that "English is truly the world language." English seems to be emerging as a global language. If this were to become official, it would reduce the amount of mis-communications and would make communication across cultures much easier.

Language may be a cornerstone of culture, but the culture itself would not have to disappear if English were used as a second or third language for the purpose of communicating globally. Currently, "English is the only language used in international air traffic control and is virtually the only language of a whole range of other activities from scientific research to pop music."

English may not be the best choice, but it is the obvious choice, for an international language. Whether we like it or not, the English language is becoming the global language.

> ➢ adapted from http://iml.jou.ufl.edu/projects/students/Wheaton/page1.htm

Appendix 6: Sample NVIVO Report

Project: CL_Analysis_Themes **User:** Administrator   **Date:** 1/26/2007 - 1:29:04 AM

DOCUMENT CODING REPORT

Document: ObservationNotes_ALL_CL

Created: 1/10/2007 - 9:20:00 PM

Modified: 1/26/2007 - 1:07:38 AM

Description:

Writing III A 2:00 4:00

Node: (1 5 1) /ClassDynamic_General/Group Work/Collaborative Work

Passage 1 of 14   Section 0, Para 200, 286 chars.

200: Andrea has the leading role in the in the small group (3). [student's name] agrees at

some point [student's name] is switching to Spanish. Her goal is to clarify her point.

Andrea Gets up and goes to the teacher to verify a vocabulary item in her outline.

[student's name] is mostly quiet during the discussion.

_____

Passage 2 of 14   Section 0, Para 206, 171 chars.

206: The teacher gives the students a choice to use a computer and work alone or to

work with a partner on the same computer. All of the students chose to work with a

partner:

_____
Passage 3 of 14   Section 0, Para 209, 159 chars.

209： she's the leading person than her partner follows her adding to her statements and expanding them. [student's name] is the one to provide new ideas, [student's name] expands them.

_____
Passage 4 of 14   Section 0, Para 212, 33 chars.

212： This pair is very collaborative.

_____
Passage 5 of 14   Section 0, Para 212, 115 chars.

212： [student's name] is definitely the leader he is the one to finalize the statements discussed and collaboratively constructed.

_____
Passage 6 of 14   Section 0, Para 213, 82 chars.

213： [student's name] leading a discussion but in a very cooperative way supporting his partner [student's name]

_____
Passage 7 of 14   Section 0, Para 217, 97 chars.

217： she's providing her opinion when [student's name] gets stuck or she detects an

error in [student's name] contribution.

220: When [student's name] asks question, [student's name] most frequently answers wave " I don't know". And then he laughs. [student's name] then stops the search or the typing and explains to Inn why they're doing the search the way they do it or whatever else is unclear to him. [student's name] is definitely creative and self-directed, while [student's name] needs and expects peer direction and support.

436: [student's name] and [student's name] work nicely together**[3]**.

---

[3]   Internal DB: Within group collaboration with one student not participating.

440: [student's name], [student's name], and [student's name]: Quiet discussion and composition process that is rather slow

---

444: [student's name] actively participate but it looks like [student's name] is making the final decisions. [student's name] is mostly silent.

_____

445: For this group all the communication seems to go through the computer.

446: They communicate about the things that are already on the screen not the things they will put. Usually the decisions are made by [student's name] but closely controlled mainly by [student's name].

_____

618: [student's name] explains his reason for making the generalization is that later they will have to analyze again a compare/contrast text and if the have the "big picture", this will help them to do the analysis easier.

619: While [student's name] and the other student agree with him,

_____

630: [student's name] works with [student's name] and [student's name].

631: He's the one to lead the discussion. The group is working very collaboratively about the different elements of the text.

_____

Appendix 7: Participants' z-scores by Measure

Participant		TUL	IUNum	IUL	LD	VC	RH	PD	Lang	Average Gain
Shin	Low	-1.072904144	1.010719788	-1.288982119	-2.268470683	-4.99092967	-1.591944144	0.948754042	-0.492870616	-1.21832844
Azad	Low	0.722248647	-0.596969891	-0.892633663	-2.088639634	-0.047450799	-1.104883524	-0.816554665	-1.130901741	-0.74447316
Isabella	High	-0.081919713	2.262577354	1.928343428	1.000449951	2.276017642	0.894340092	0.801043203	1.421222759	1.31275934
Felipa	High	1.753424533	-0.473754858	0.956107686	3.096551718	-0.173507933	3.944156651	4.870859907	0.29369732	1.78344188
Gains ACMC		0.017540208	-0.039809887	0.122909217	0.08704579	-0.063707522	0.021701206	0.111291485	-0.148536338	0.01355427
Kamil	Low	-0.191620053	-0.555898213	-2.025924631	-0.585669431	0.097329662	-1.104883524	0.409554752	-1.130901741	-0.63600165
Ajwad	Low	-0.276310822	-0.145181437	0.694937204	0.412313528	-0.636829904	-2.129985899	-2.042664083	-1.130901741	-0.65682789
Suong	High	0.657180269	0.679199241	0.500260276	-0.028187002	2.901174683	0.919830659	-0.816554665	-1.130901741	0.46025022
Kang	High	-0.766533188	-0.17870166	-0.547247349	1.859607826	2.115912528	0.919830659	0.409554752	1.346954354	0.64492224
Gains SCMC		-0.095458738	0.071886564	-0.262806804	-0.208194316	0.155181904	-0.0283785	-0.145535019	0.098937669	-0.05179591
Gains CMC - ALL		-0.031426002	0.008591908	-0.044234392	-0.040891589	0.031144563	0	0.00E+00	-0.041297602	-0.01476414

(1) **TUL** - the syntactic complexity (measured by calculating the mean length of t-units)
(2) **IUL** - the amount of information present in a single focus (measured by mean length of idea units)
(3) **IUNum** the quantity of overall information present (measured by the number of idea units),
(4) **LD** - lexical information per clause (measured through lexical density analysis)
(5) **VC** - vocabulary complexity (measured by analyzing the frequency of the unique words used)
(6) **Rh** - rhetorical soundness
(7) **PD** - presentation and development of main ideas
(8) **Lang** - overall language use (the last three criteria were assessed using a multiple trait rubric).

1. *How old are you?*

I'm 19.

2. *In which country did you receive your education?*

In my country Qatar.

3. *What did you study before coming to the ELI?*

In my elemanry school I studied many subjucts like, History science and, but in my high school I choose science only.

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

Teaching inmy country was very bad . I like tak and in school you don't talk. Listen to the teacher.

5. *What is the importance of being a good writer for an educated person?*

No answer.

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

No answer.

7. *What is the most difficult thing for you when you write in English?*

No answer.

8. *What is the most enjoyable thing for you when writing in English?*

No answer.

9. *How comfortable are you when working with computers?*

I'm can use the computer easiely, but not in every programs because there are some programs it is diffecult to me.

10. *How were computers used at your previous school(s)?*

used the computers only in computer class.

11. *Did you use computers to communicate with other people (chat, email, list serves) before this class?*

I use the copmuter often. Chat and email. Not listserve

12. *You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?*

No answer.

13. *How good computer communication skills in English can help you (if at all) in the future?*

No answer.

How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?

I did a good job in that pictures.

14. *Did you use anything additional an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

No.

15. *Did you find that your typing skills hindered your discussion on-line?*

Yes it slou.

16. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

I did a good job. Easy. my partner is good we had not a time to talk. I like that he tell and I tell then. We do it together.

17. *Do you think computer discussion activities are good for learning how to write better? Please explain your opinion.*

It was not very helpful, bacause we did not have a time to write many things.

Yes,because it improved my spelling.

18. *Did you include in your writing some of the ideas that your partner shared with you?*

I write new ideas.

19. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

Yes.

20. *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

Spell check.

Task:

Read the following text. Do you agree or disagree with the author? Post your opinion on Nicenet, Conference topic: English as a World Language: Agree or Disagree.

It is widely believed that "English is truly the world language." English seems to be emerging as a global language. If this were to become official, it would reduce the amount of mis-communications and would make communication across cultures much easier.

Language may be a cornerstone of culture, but the culture itself would not have to disappear if English were used as a second or third language for the purpose of communicating globally. Currently, "English is the only language used in international air traffic control and is virtually the only language of a whole range of other activities from scientific research to pop music."

English may not be the best choice, but it is the obvious choice, for an international language. Whether we like it or not, the English language is becoming the global language.

Text adapted from: http://iml.jou.ufl.edu/projects/students/Wheaton/page1.htm

I think that English can be the world language very soon for several reasons.First,English is one of the easiest languages in the world. Second, it is very famous language and it is common to use it in many places. Third, many schools, companies,and Universities use it in different ways around the world.finally, there are many students study in English in some Universities in U.S. or in other countries which use the English as the first language.

English will be the world language, but it is will be the second or the third language in these countries.

1.   *How old are you?*

I'm 38years old

2.   *In which country did you receive your education?*

Korea

3.   *What is the highest degree you have? In what area?*

I graduated a university. My major was nursing.

4.   *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

In our country, classes has organized the same in america. In nursing schol, We have two kinds of things that are practice and theory.

5.   *What is the importance of being a good writer for an educated person?*

Very important for study

6.   *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

The language learner have to study a lot of vocabulary and words for improve good writing skills.

7.   *What is the most difficult thing for you when you write in English?*

I am too difficult how I can use world order correctly.

8.   *What is the most enjoyable thing for you when writing in English?*

I like to write about the trip.

9.   *How comfortable are you when working with computers?*

When I began the ELI, I was uncomfortable. However, now I can use computer more easer than past.

10.   *How were computers used at your previous school(s)?*

I did not use computer before I study the ELI.

11.   *Did you use computers to communicate with other people (chat, email, list serves) before this class?*

I usually use computer when I send to E-mail with my family and friend.

12. *You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?*

I did more enjoy Nicenet because I can not type quickly

13. *How good computer communication skills in English can help you (if at all) in the future?*

I need to have a good computer communication skill because I have to give important information to my patients.

14. *How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?*

I was uncomfortable because I can not use computer very well. In class I can not speak if I want. In computer I have to.

15. *Did you use anything additional an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

I used electronic dictionary.

16. *Did you find that your typing skills hindered your discussion on-line?*

I did find.

17. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

I was helpful about sharing information with my partner.

18. *Do you think CMC activities are good for learning how to write better? Please explain your opinion.*

I think that discussing face to face is better then on-line discussion. Easier no type.

19. *Did you include in your writing some of the ideas that your partner shared with you?*

Yes , I did.

20. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

When I did not understand some information, I asked to my partner.

21. *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

I used grammar ,spell check and formatting.

Appendix 11: Ordered Comparison Matrix

	Name	Gender	Education & Field of Studies	Treatment CMC Pattern	Treatment Partner's Pattern	Computer Experience	Task Helpful	Task Shortcomes	Task Attitude	CMC - Paragraph Organization	Paragraph Organization	Overall Number of Turns	Actor's Turns	Paragraph IU #
ACMC Low	Azad	M	**HS** - science orientation	Dominant	Dominant	Experienced	**Yes - ?**	¤	Satisfied	**Ø**	**&**	**11**	5	11
ACMC Low	Shin	F	**P** - nursing	Dominant	Dominant	Limited Experience	**Yes - ?**	Ŧ	Uncomfortable	**O**	**own =**	5	3	20
ACMC High	Felipa	F	**C -** college	Dominant	Dominant	Experienced	Yes	**?Ŧ**	Positive	**O**	**&**	2	1	18
ACMC High	Isabella	F	**P** - marine biology	Dominant	Collaborative	Experienced	**Yes - ?**	**?** (about general CMC tasks)	Positive	**O**	**P=**	2	1	38
SCMC Low	Ajwad	M	**P** - industrial ingeneering	Collaborative	Collaborative		**Yes - ?**	Ŧ	Positive	**O**	**&**	**82**	39	21
SCMC Low	Kamil	M	**C -** college	Passive	Dominant	Experienced	**OK**	**boring**	Low motivation and engagement	**Ø**	**&**	10	5	13
SCMC High	Kang	M	**C -** college	Collaborative	Collaborative	Experienced	Not known	Not known	Not known	**Ø**	**&**	31	19	12
SCMC High	Sun	F	**P** - information systems	Collaborative	Collaborative	Experienced	**Yes - ?**	Good for discussion not writing	Comfortable	**Ø**	**&**	83	41	29

Appendix 11: Ordered Comparison Matrix (continued)

	Name	Gender	CMC-IU# Total - Partner	CMC-IU# Total - Actor	CMC IU Content - Partner	CMC IU Content - Actor	CMC IU Partner's Exact % of total Pragraph IU	CMC IU Partner's Rephrased % total Pragraph IU	CMC IU own Exact % of total Pragraph IU	CMC IU Own Rephrased % total own IU	CMC IU New % total IU	Lexical Intertextual Connections	Rephrasing Strategise	New Ideas	Improved	Use of pre-treatment discussion
ACMC Low	Azad	M	15	10	11	8	0	2-18.18%	1-9.1%	5-45.45%	3-27.27%	26.09 - Low	Syn , Synt , Short IU , CCh	NT	IUL, LD	DIB
ACMC Low	Shin	F	18	15	8	8	0	5 -25%	1 -5%	5-25%	9-45%-	34.95 - LowAv	Syn , Synt, Short IU CCh, CIU, EIU, Mreph	NT, N , NC	PD	CB+ Underi
ACMC High	Felipa	F	39	35	32	26	0	0	4 -22.22%	8-44.44%	6-33.33%	27.27 - Low	Syn, Synt , EIU , CIU, Gr -	NT, N, NC	TUL, IUL, LD, Rh, PD, Lang	DIB
ACMC High	Isabella	F	28	38	13	21	0	2 -5.26%	0	14-36.84%	22 -57.89%	44.68 - Higher	DevIU, Gr, EIU, ShortIU, Syn, Synt	NC, NOSum, NOPSum, NT, N	IUL , IUNum, LD, VC, Rh, PD, and Lang	DIB+ CB
SCMC Low	Ajwad	M	57	50	19	20	0	1 -4.76%	0	1 -4.76%	19 -90.48%	20.87 - Low	Syn Synt	N, NT	IUL, LD	CB+ Underi
SCMC Low	Kamil	M	9	8	7	3	0	0	0	0	13 (100%)	18.92 - Low	0	N, NT - , NC	LD, PD	DOI
ACMC High	Kang	M	32	28	16	14	0	1 -8.33%	1 -8.33%	3-25%	8 -66.67%	21.43 - Low	Syn & Synt	N, NT, NIU	LD, VC, Rh, PD, Lang	CB
ACMC High	Sun	F	65	54	25	13	0	3(10.34%)	0	4 (13.79)	22 (75.86%)	16.52- Low	Syn & Synt , Syn, Synt, & Merge, ShortIU & Synt ShortIU, EUI, DevIU	N, NT, NIU	TUL, IUL, IUNum, VC, Rh	CB

CMC IU Content - Partner	CMC IU Content - Own	CMC IU Partner's Exact - total Paragraph IU	CMC IU Partner's Rephrased - total Paragraph IU	CMC IU own Exact - total Paragraph IU	CMC IU Own Rephrased - total own IU	CMC IU New % total own IU	Lexical Intertextual Connections	Rephrasing Strategies	New Ideas	Improved	Use of pre-treatment discussion
11	8	0	2-18.18%	1-9.1%	5-45.45%	3-27.27%	26.09 - Low	**Syn** (4 - 36.4%), **Synt** (4 - 36.4%), **Short IU** (3-27.3)**, CCh** (1 - 9.1)	**NT** (1 - 9.1)	**IUL**, **LD**	**DOI**
8	8	0	5 - 25%	1 -5%	5-25%	9-45%-	34.95 - LowAv	**Syn** (1 - 5%), **Synt** (3 - 15%), **Short IU** (**2 - 10%**), **CCh** (1 - 5%), **CIU** (1 - 5%), **EIU** (2 - 10%), **Mreph** (5 - 25%)	**NT** (4-20%), **N** (4-20%), **NC**(1 -5%)	**PD**	**CB+Under i**
32	26	0	0	4 - 22.22%	8-44.44%	6- 33.33%	27.27 - Low	**Syn** (6 - 33.33%) , **Synt** (5- 27.78%), **EIU** (4- 22.22%), **CIU** (1 - 5.56), **Gr** - (1-5.56%)	**NT** (4 - 44.44%), **N**(1 - 5.56%), **NC**(1 - 5.56%)	**TUL**, **IUL**, **LD**, **Rh**, **PD**, **Lang**	**DOI**
13	21	0	2 - 5.26%	0	14 - 36.84%	22 - 57.89%	44.68 - Higher	**DevIU** (6- 15.79%), **Gr** (4- 10.53%), **EIU** (3 - 7.89%), **ShortIU** (3 - 7.89%), **Syn** (6- 15.79%), **Synt** (2- 5.26%)	**NC** (2-5.26%), **NOSum** (4-10.53%), **NOPSum** (1-2.63), **NT** (6 - 15.79%), **N** (10 - 26.32%)	**IUL** , **IU**, **LD**, **VC**, **Rh**, **PD**, and **Lang**	**DOI+CB**

Appendix 11: Ordered Comparison Matrix (continued)

Key Abbreviations:

Collaborative brainstorming – **CB**
Individual brainstorming - **IB**
Background: (1) College – **C,** (2) Professional – **P,** High school – **HS,** Keyboard skills - **T**
CMC Task Perceptions: (1)Limited Time - ¤, (2) Sharing information - **?**, (3)Confused in the beginning, may create confusion **?,** (4) Underdeveloped ideas - **Underi**
Gains - (1) **TUL** - the syntactic complexity (measured by calculating the mean length of t-units), (2) **IUL** - the amount of information present in a single focus (measured by mean length of idea units), (3) **IUNum** the quantity of overall information present (measured by the number of idea units), (4) **LD** - lexical information per clause (measured through lexical density analysis), (5) **VC** - vocabulary complexity (measured by analyzing the frequency of the unique words used), (6) **Rh** - rhetorical soundness, (7) **PD** - presentation and development of main ideas, (8) **Lang** - overall language use (the last three criteria were assessed using a multiple trait rubric).
Lower than average - **LowAv**
CMC Discussion Use --> Paragraph: (1) Development of own ideas – **DOI,** (2) Individual Brainstorming –**IB,** (3) Discussed – **O, (4)** Not discussed – **Ø,** (5) Partner's suggestion followed **=P,** (6) Order from CMC followed - =, (7) Order from CMC shuffled - &, (8) New - extends discussed topic – **NT, (9)** New - entirely – **N, (10)** New for cohesion – **NC** (10) New Summary of own discussion, own-partner, partner - **NOSum, NOPSum, NPSum**
Rephrasing Strategies: (1) Shortening idea units - **Short IU, (2)** Synonyms and synonymic phrases - **Syn**; (3) Syntactic change - **Synt**; (4) Combining IU – **CIU;** (5) Extending IU – **EIU;** (6) Major Rephrasing – **Mreph,** (7) Content Change **CCh;** **(8)** Development of one idea unit into more – **DevIU**; (9) Successful grammar correction – **Gr;** (10) Coherence/cohesion devices addition - **Coh**

1. *How old are you?*

23 [from student's file]

2. *In which country did you receive your education?*

Colombia [from student's file]

3. *What is the highest degree you have? In what area?*

Some university education [from student's file]

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

No answer.

5. *What is the importance of being a good writer for an educated person?*

No answer.

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

No answer.

7. *What is the most difficult thing for you when you write in English?*

No answer.

8. *What is the most enjoyable thing for you when writing in English?*

No answer.

9. *How comfortable are you when working with computers?*

I feel very good because I like the computers and the internet because you can find everything that you like shopping friends etc.

10. *How were computers used at your previous school(s)?*

well in my school I din't use to much the computers because my school was a little monotonous and antiquated (nuns) but I learn a little about computers at home with my sister because she study about this in the university and about if.

11. *Did you use computers to communicate with other people (chat, email, list serves) before this class? This type of communication is called Computer Mediated Communication and I will use CMC when talking about it. You can do the same in your answers.*

I like use the chat yes I love chat with my family after the class because it is only my free time for use CMC and this is very important for me because in this way you never are feeling alone .

12. *How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?*

I felt very good but i needed time for understood each question but the work was very nise because my brain was confused

13. *Did you use anything additional – an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

My husband and the dictionary were help me a little but thanks because in this form i can learn more about the US.

14. *Did you find that your typing skills hindered your discussion on-line?*

No I was ok.

15. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

No answer.

16. *Do you think CMC activities are good for learning how to write better? Please explain your opinion.*

No answer.

17. *Did you include in your writing some of the ideas that your partner shared with you?*

598

No answer

    18. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

No answer.

    19. *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

No answer.

FROM: Teacher   (01/16/06 2:19 PM GMT -06:00)
SUBJECT: Writing Class

Please tell me what you hope to learn in this writing class. What are some language skills that are difficult for you that you would like to improve? What are some English skills that are easier for you that you could help other students with?

Click on "Post a New Message" below to type your response and remember that other students will read what your write.

Teacher's Name

FROM: Felipa   (01/23/06 1:29 PM GMT -06:00)
SUBJECT: Felipa

hello everybody
I would like to tell you. That i want to know everything about writing.
sometimes i am comfuse with the vocabulary and the order of the words.
i want to know about how i can write in past and present progresive.
and also i what to know about punctuation because mine it's terrible.
thanks a lot
Felipa

1. *How old are you?*

I am 28

2. *In which country did you receive your education?*

I received my education in Italy.

3. *What did you study before coming to the ELI?*

I have a degree in biology and I have done an sperimental thesis in marine biology specifically in bioacoustics.

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

    The teaching in Italy is very different if you are in the high school or in the University.In the high school you are much followed: th e teacher says you what you have to do during the class and at home. You have the interrogation also every day and there are some afternoon activity like sports, informatics or theather.
At the University often you can have any contact whit your teacher. You can prepare you exam alone in your home for the first years. The teacher racommend to the alumns to be present but it is not an obbligation. For the last years when you should choose your specialization the attendance is necessary. The teacher should know you becouse often will be him to follow you during the thesi's degree. You can also choose to do the thesis outside the institution of the University, like me, and in my opinion this is the best mood to know who the world of work go on and after the thesis often you can stay in that laboratory for working whit them..

5. *What is the importance of being a good writer for an educated person?*

    For me being a good write means to known exactly what I want to explain and to be able to addend a lot of possible example and argument to enrich the main idea

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

The important thing to develop is the grammar becouse if you have a good idea to explain but you don't know how to explain it nobady could understand you

7. *What is the most difficult thing for you when you write in English?*

The most difficult I have when I write in English is to rende in corret grammar what I want to say.

8. *What is the most enjoyable thing for you when writing in English?*

The most enjoyable thing is excercising writing in English to impruve my writing capacity. Have a good writing capacity means to use a good language property, use right words and term and be more clear as possible in order to explain you idea.

9. *How comfortable are you when working with computers?*

I became to use the computer only 2 years ago when I started to write my thesi's degree and I have to say that now I can't stop to use. I always use computer: to send e-mail, to study and to have news from world every day. Now I can be able to use some software that before I didn't know and the use of them has changed my mood of study. For example I use Exel for calculation or word for writting all thing that before I use to do on paper but using less time. Other I often do presentations in my language about the biology and I use Power point (that I love!). In conclusion I am really comfortable working with computers now.

10. *How were computers used at your previous school(s)?*

In my school the computer was few used. There were specific schools in which you could learn to use it but for example in scientific high scool, that I attended, is not used or teached.In the University we use to write our paper for most of teacher on paper yet. Now the reality is changing becouse already from the medium school the guys learn the use of computer.

11. *Did you use computers to communicate with other people (chat, email, list serves) before this class?*

I started to use the computer using Internet and to send e-mail. Through the computer infact I can get news about master degree in biology, where the research is better and communitate with some researchers who live in the other part of the world.

12. *You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?*

Normally I don't you a lot the chat becouse I don't have much time in the school and I don't have personal computer in my apartment yet. So right now I have only used the ICA2. I can't say what I prefer but I know that also in Italy where I have more time I usually don't use the chat.

13. *How good computer communication skills in English can help you (if at all) in the future?*

I think that the computer will be always more important: people could chat using the computer, send their documents when they aren't in the office and study at home using Internet.

14. *How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?*

I FEEL GOOD BECAUSE [partner's name] IS A GOOD PARTNER AND WE DIDN'T HAVE PROBLEM ABOUT THE CHOICE OF THE ORGANIZATION OR WHAT PUT IN THE PARAGRAPH. WE WERE SUDDELY AGREE ABOUT THE CHANGES TO DO IN OUR PARAGRAPH AND HOW PROCEED.
I FEEL REALLY GOOD USING THE ONLINE DISCUSSION BECAUSE YOU CAN EXPLAIN YOUR OPINION WITHOUT BEING IN THE SAME PLACE AT THE SAME TIME.

15. *Did you use anything additional – an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

YES I USED INTERNET IN ORDER TO FIND SYNONISM, AND NEW WORDS.

16. *Did you find that your typing skills hindered your discussion on-line?*

No answer.

17. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

Sometimes it could be helpful because you can share your ideas with your partner and he/she could help you writting better. Somethimes, on the contrary, it could be distractive because you could miss much time to chat and discuss about the topic loosing time needed for writting.

18. *Do you think computer discussion activities are good for learning how to write better? Please explain your opinion.*

in my opinion is different if you speak stundent to student or if you speak on line with your teacher. sometimes When you speak with your classmate could be difficult to make understand and you can loose your time nedeed for the writting. On the contrary when you speak with your teacher is always helpful because your teacher could help you to impruve your writting but also your grammar.

19. *Did you include in your writing some of the ideas that your partner shared with you?*

Yes, my partner helped me changing the organization of the paragraph and it was really helpful.

20. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

I compared my suggestions and I review these in order to impruve the writting. It was really simple because [partenr's name] gave me really good suggetions.

21. *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

I use all of them and I also use a site m-w.com in order to find the definitions of words I don't know.At the end for me is really important to use the grammatical correction and counting of the words.

Appendix 15: Ajwad – ACMC Interview with the Researcher and Notes from the Face-to-

Face Interview

1. *How old are you?*

   27

2. *In which country did you receive your education?*

King Abdulaziz University Saudi Arabia

3. *What did you study before coming to the ELI?*

industrial Engineering

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

No answer

5. *What is the importance of being a good writer for an educated person?*

For me it is very important, because I am one person who thinking, and I can't deliver my idea to large number from the people I focus to them, so if I am a good writer and I have good idea the people will resave my idea.

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

It is very important to me, because if I write in any subject even if I tack deferent position I will found many writer wrote in the same subject so I need in that time to be unique in that subject, In idea, in the steppes to present my subject, make my subject easy to understand witch mean good skills in writer.

7. *What is the most difficult thing for you when you write in English?*

Spilling and how to make my idea in English

8. *What is the most enjoyable thing for you when writing in English?*

If I can delivery my idea to the people, and I can effect to the people so I make change.

605

9. *How comfortable are you when working with computers?*

Very comfortable, and I like do do every thong by computer, even if I start like new writing.

10. *How were computers used at your previous school(s)?*

we used the computer as a basic thing. In the first class in my field, the chairmen of industrial engineering was the instructors, and I remember what he said about using computer, he said " any one in industrial Engineering who don't have computer in his home, he can transfers to another department, and we are welcome to help any student to bay computer"
I remember the first time I use the computer since I was 13 years old, my father send me to the computer center in King Abdulaziz University in the summer to take Course about DOS and then windows 3.1 skills, and then Microsoft office.
And I remember the first time I deal with the enter net was to open my email.

11. *Did you use computers to communicate with other people (chat, email, list serves) before this class?*

Yes, to contact or take appointment

12. *You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?*

Answer provided during the face-to-face interview (see the end of the Appendix).

13. *How good computer communication skills in English can help you (if at all) in the future?*

No answer provided.

14. *How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?*

It was something new for me, to see the word in the static positions, and some time I need to stand out of habit, just to cut the rotten. Also it give me good chance to listen to the people in deferent ways so at least I can look to the picture from deferent ways.

15. *Did you use anything additional an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

NO.

16. *Did you find that your typing skills hindered your discussion on-line?*

Absolutely yes, because when I speak with the people we have million and million idea to discus, and we need to speak continuously and quickly to represent all these idea, but in the computer I thing it is limited.

17. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

No answer provided.

18. *Do you think computer discussion activities are good for learning how to write better? Please explain your opinion.*

No answer provided.

19. *Did you include in your writing some of the ideas that your partner shared with you?*

No answer provided.

20. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

Answer provided during the face-to-face interview (see the end of the Appendix).

21. *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

Additional face-to-face interview

Ajwad liked more chatting but did not like the LECS interface. He thinks that completing discussion online is important for learning how to write and allows to organize the ideas better. He uses spell-check. Used the ideas of his partner
According to Ajwad, people are difficult to lead because they need a lot of choices and space for creation. He sees this in class as well. He says: "If a manager gives me orders, I will obey but I will not be creative because this is his idea, but if he shares a project with me in the beginning, start working with him and this project will be my project too and I will be more creative".
        Further, Ajwad continued the analogy, he said that the ELI was very structured and did not consider the specifics of students. He was referring mainly to the Saudi students because their relatively large group of the ELI. He thought that more space for being creative would help him and the other students from Saudi Arabia. The structure of the classes lowered his motivation and the motivation of others. He thought that this was

disrespectful from the teachers' side to treat them as if there were pupils, in other words children who were unable to make their own decision.

Ajwad volunteered for this short interview at the end of one of the classes I observed after the treatment was over, he was eager to share his opinion with me.

1. *How old are you?*

I`m 19 years

2. *In which country did you receive your education?*

Kuwait

3. *What did you study before coming to the ELI?*

Finance

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

It was really very good organized , yeah some times my teacher lecture duing in my class, actually I like the system in my class and I hate when some one try to bother the student

5. *What is the importance of being a good writer for an educated person?*

I think We must write a lot to improve writing skills ,

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

Read books and write a lot

7. *What is the most difficult thing for you when you write in English?*

I've problem with the spieling

8. *What is the most enjoyable thing for you when writing in English?*

Actually I write anything cause it makes me bored ,But I enjoyable just when I write my name in English.

9. *How comfortable are you when working with computers?*

Very comfortable

    10. *How were computers used at your previous school(s)?*

No answer.

    11. *Did you use computers to communicate with other people (chat, email, list serves) before this class?*

Yes

    12. *You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?*

No answer.

    13. *How good computer communication skills in English can help you (if at all) in the future?*

Actually the computer is really important for our life and it`s very easy to done the works with it that why i prefer to work by computer because i get used to work with it in my high school and in my life .Also the computer chek my spelling mistake . finnaly i prefer the computer because we learn more with it

    14. *How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?*

It was ok. Little boring

    15. *Did you use anything additional an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

    Nothing

    16. *Did you find that your typing skills hindered your discussion on-line?*

No

    17. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

Some of my partner ideas were helpful.

18. *Do you think computer discussion activities are good for learning how to write better? Please explain your opinion.*

No, I don't think so. nobody says if I make mistakes or not.

19. *Did you include in your writing some of the ideas that your partner shared with you?*

not all of them only if agree.

20. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

Only best ideas we had

21. *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

Spell check and synonyms

Appendix 17: Kang – ACMC Interview with the Researcher

1. *How old are you?*

I'm 24 years old. I was born in Dec,1981

2. *In which country did you receive your education?*

I have educated in korea since 1988.

3. *What did you study before coming to the ELI?*

My major is machanical engineering. So, I studied a lot of subject about engineering. And I have been study english to get a score TOEIC(Test Of English for International Communication) test which is mandotory to get a job in South Korea.

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

In korea, the classes is usually lecture. It have a merit that a student can learn many content for a short time. But because of that many krean student have a passive trend. I think it is a problem.

5. *What is the importance of being a good writer for an educated person?*

To be a good writer, there are essential codition. Such as vocabulary, gammer, phase verb,.

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

We should read many kinds of English book. And Trying to writting somthing english at all time.

7. *What is the most difficult thing for you when you write in English?*

translation. I think of writing somthing as Korean. and then try to translate from korean to english.

8. *What is the most enjoyable thing for you when writing in English?*

I don't know. Because I feel difficuty to write english. But, I will be satisfied when someone can understand what to say.

9. *How comfortable are you when working with computers?*

No answer.

10. *How were computers used at your previous school(s)?*

No answer.

11. *Did you use computers to communicate with other people (chat, email, list serves) before this class?*

No answer.

12. *You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?*

No answer.

13. *How good computer communication skills in English can help you (if at all) in the future?*

No answer.

14. *How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?*

No answer.

15. *Did you use anything additional – an electronic dictionary, the Internet, a regular dictionary, when writing your messages?*

No answer.

16. *Did you find that your typing skills hindered your discussion on-line?*

No answer.

17. *Was the computer discussion activity you did helpful for you when getting ready to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?*

No answer.

18. *Do you think computer discussion activities are good for learning how to write better? Please explain your opinion.*

No answer.

19. *Did you include in your writing some of the ideas that your partner shared with you?*

No answer.

20. *When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?*

No answer.

21.   *When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).*

No answer.

Appendix 18: Sun – ACMC Interview with the Researcher

1. *How old are you?*

27

2. *In which country did you receive your education?*

Twiwan

3. *What did you study before coming to the ELI?*

Management information system

4. *How were your classes organized in your country? (Did your teacher lecture during your classes? Did you do group activities during your classes? What did you like about your classes and what you did not?)*

no lecture. yes, we do group activities like-> discuss with professro and classmate not like -> only listen what the professor said.

5. *What is the importance of being a good writer for an educated person?*

have personal and specific opinion; have a lot of vocabulary to describe what he/she want to say

6. *For you as a language learner, how important is it to develop good writing skills in English? Please explain your answer.*

read more make me know how the other author write

7. *What is the most difficult thing for you when you write in English?*

vocabulary are not enough

8. *What is the most enjoyable thing for you when writing in English?*

I can learn more and more vocabulary and let the other know what is my opinion.

9. *How comfortable are you when working with computers?*

I am pretty comfortable when working withe computers. Actually, my job is computer software designer and I work use computers everyday. I will uncomfortable if no

computers can be used anymore.

10. How were computers used at your previous school(s)?

We used computer to design software, do homework, look for information for presentation.

11. Did you use computers to communicate with other people (chat, email, list serves) before this class?

yes, I used computers to communicate with other people,
1) chat with my classmates, friends, customers and my team members
2) email to my classmates, friends, customers and my team members. For business purposes and personal communication.
3) Using the online banking services, communicate with banks
4) using the online stores to buy something, like books.

12. You have chatted with L.E.C.S. (the program you used to interview a partner) and also posted on Nicenet in this class. What did you like more: chatting with L.E.C.S. or conferencing on Nicenet? Why?

I like both. But I don't like LECS

13. How good computer communication skills in English can help you (if at all) in the future?

No answer.

14. How did you feel completing the discussion of the pictures? How was it different from when you discuss things in class?

I found it was easy to discussion of the pictures. Nothing expect I must increase my vocabulary.

15. Did you use anything additional an electronic dictionary, the Internet, a regular dictionary, when writing your messages?

yes, I used an electronic dictionary and the online dictionary (webster online) to help me when writing my messages.

16. Did you find that your typing skills hindered your discussion on-line?

no, never. My typing skills are very well.

17. Was the computer discussion activity you did helpful for you when getting ready

to write the assigned paragraph? Please explain your answer: What was very helpful? What was distractive or not helpful?

On my opinion, it is helpful. When I discussioning activity, I can get more information and different opinions for other people.

18. Do you think computer discussion activities are good for learning how to write better? Please explain your opinion.

No, I don't think so. Discussion activities are like chats. I can get for information but it's not useful for learning how to write better.

19. Did you include in your writing some of the ideas that your partner shared with you?

Yes.

20. When you wrote your paragraph, how did you use the messages you and your partner wrote when discussing the pictures?

To write more sentences and words to describe the ideas which we shared.

21. When you wrote your paragraph, which help features of Microsoft Word did you use (i.e. cut & paste, formatting, spell check, Thesaurus, etc.).

I use cut, paste, spell check to help me in writing.

Appendix 19: Summary of Quantitative Stage Findings

Research Question	Analysis	Findings
Research Question 1: What is the difference in the syntactic complexity present in the post-treatment paragraphs of the students who participated in the synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: ANCOVA	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 2: What is the difference in the amount of information present within a single focus of the post-treatment paragraphs of students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: ANCOVA	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 3: What is the difference in the quantity of the overall information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: ANCOVA	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 4: What is the difference in the lexical information present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: ANCOVA	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 5: What is the difference in the vocabulary complexity present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: ANCOVA	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 6: What is the difference in the rhetorical soundness present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: Mann-Whitney U-test	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 7: What is the difference in the presentation and development of the main point and its support present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: Mann-Whitney U-test	Failed to reject the Null Hypothesis at $\alpha = .05$
Research Question 8: What is the difference in the overall language use present in the post-treatment paragraphs of the students who participated in synchronous versus asynchronous CMC pre-writing discussion?	Quantitative analysis of students' first drafts: Mann-Whitney U-test	Failed to reject the Null Hypothesis at $\alpha = .05$

Appendix 20: Summary of Qualitative Research Findings

Research Question	Analysis	Findings
Research Question 1: What are the students' perceptions of the role of CMC in the process of establishing their writing skills?	Qualitative analysis of students' interviews	1. CMC discussion supported the writing of their first paragraph drafts in the following ways: - Supported the generation of ideas - Students understood better the topic of the written assignment - Students incorporated their partners' ideas into their paragraphs - The written format of the discussion supported their paragraph writing 2. There were students who perceived as more appropriate to incorporate only their own ideas into the paragraph. The majority of these students participated in an ACMC discussion and demonstrated dominant patterns of interaction. 3. Four main reasons for the CMC pre-writing being unnecessary were pointed out: - They experienced difficulties formulating ideas in a text-based environment - The text-based mode of communication was time-consuming - Teacher feedback was identified as more valuable than interactions with peers - Writing was defined as an individual activity that does not require peer collaboration
Research Question 2: What patterns of dyadic interaction do participants manifest during the asynchronous and synchronous CMC interaction process?	Qualitative analysis of students' CMC interactions	The patterns of dyadic interaction were strongly influenced by mode of interaction: - The SCMC discussion promoted opportunities for more collaboration - The ACMC discussion, led to more dominant patterns - A mutuality mismatch - the trend was stronger in ACMC discussions - Disengagement (observed mostly in the ACMC group)- students abandoned the discussion despite their partners' request for contribution, or both participants posted only once and would not engage in further discussion.

Appendix 20: Summary of Qualitative Research Findings (continued)

Research Question	Analysis	Findings
Research Question 3: What are the factors that influence the CMC pre-writing interaction process? How do these factors influence the interaction process?	Qualitative analysis of students' CMC interactions & interviews	1. CMC mode of interaction - the most dominant factor that influenced the pre-writing discussion: - The ACMC mode: * triggered postings that used longer strings of words often organized in complete sentences *the number of unique words was lower * led to more dominant patterns of interaction * the collaborative students contributed longer postings demonstrating multiple collaborative moves in one posting *the dominant students would more often abandon the discussion space after posting once *there were more instance of mutuality mismatch - The SCMC mode: *the electronic utterances were much shorter * the electronic utterances did not always comprise complete sentences * generated longer discussions, with higher number of turns * students demonstrated a stronger tendency to collaborate with each other, * the collaborative moves were frequently spread out through separate postings. *the dominant students would make several postings but would demonstrate inability to engage into a discussion with their partner 2. The use of computer as an interaction medium: students reported - difficulties related to typing skills - difficulties expressing themselves in a text-based environment - CMC interaction being more time-consuming and challenging - Some students were less likely to use the computer in the early stages of the writing process

Appendix 20: Summary of Qualitative Research Findings (continued)

Research Question	Analysis	Findings
Research Question 3: (cont.) What are the factors that influence the CMC pre-writing interaction process? How do these factors influence the interaction process?	Qualitative analysis of students' CMC interactions & interviews	3. Partner interaction - inability or the unwillingness of one of the partners to engage in the interaction resulted in interactions that would not develop completely the topic - students viewed their partners' contributions to be influential to the interaction 4. Opinion of the nature of writing - no relation found between patterns of dyadic interaction and attitudes towards writing in the group of students who expressed overall positive opinion about writing - there was a relation between the dominant dyadic pattern of interaction and the less view on writing as an individual experience

Appendix 21: Summary of Case Study Research Findings

Research Question	Analysis	Findings
Research Question 1: How do peers participate in synchronous and asynchronous CMC interactions?	Instrumental Case studies: interviews, intertextual analysis of CMC interactions and first drafts	1. The CMC mode of interaction affected strongly the nature of dyadic patterns of interaction. 2. The ACMC actors, regardless of their post-treatment gains, were mostly concerned with their own postings, demonstrating dominant patterns of interaction. 3. The SCMC actors were more likely to participate in a collaborative mode of interaction. 4. The collaborative dyadic patterns SCMC actors demonstrated during the interactions were not necessarily related to their post-treatment gains. 5. The passive SCMC actor had a low treatment gain. 6. The mode of interaction may have influenced the number of postings. 7. The high-gain ACMC actors and the collaborative SCMC actors, regardless of their gain, contributed significantly to the discussion. 8. The low-gain ACMC actors and the passive SCMC actor failed to contribute significantly to the interaction on the assigned topic.

Appendix 21: Summary of Case Study Research Findings (continued)

Research Question	Analysis	Findings
Research Question 2: *(a)* How do they use the specific ideas and language generated during these interactions in their writings? *(b)* What are the differences and similarities in the implementation of these ideas?	Instrumental Case studies: intertextual analysis of CMC interactions and first drafts	1. The high-gain ACMC actors demonstrated higher level of **lexical intertextuality** as compared with the rest of the actors. 2. **On organizational level**, most of the actors, regardless their mode and gain level showed no intertextual connections. In addition, organization was more likely to be discussed by ACMC actors. 3. Trends of **intertextual connections** on **idea units** level: (1) The ACMC actors tended to use more high-level intertextual connections by borrowing verbatim or rephrasing idea units from the discussion; (2) Medium level intertextual connections were more likely to be established in the SCMC actors' paragraphs; (3) High-gain SCMC participants were more likely to establish high and medium levels of intertextual connections, as compared to the low-gain participants who participated in the same CMC mode; (4) High-gain actors, regardless to the CMC mode, were more likely to move beyond the single idea-unit boundaries when paraphrasing; (5) High-gain ACMC actors were able to implement some grammar correction into the idea units when rephrasing them; (6) Collaborative actors, who were all SCMC actors, were able to consider and include in their paragraphs their partners' contributions to the discussion; (7) The collaborative actors, who also had high gains, were able to consider their partners' contribution to the discussion to a higher extent, as compared to the low-gain collaborative SCMC actor; (8) Most of the actors developed their paragraphs beyond the topics discussed during the pre-writing interactions.

Appendix 22: Additional Quantitative Findings

Research Question	Analysis	Findings
Additional Research Question: Do the ACMC and the SCMC modes of the pre-writing discussion influence to a different degree the texts produced after those discussions as measured by matching distinct lexical items?	Quantitative analysis of students' first drafts (*t*-test)	- There was a statistically significant difference ($\alpha=.05$) between the intertextual connections the ACMC and the SCMC groups as measured by DLIs. - The intertextuality of the participants' writings and their pre-writing discussions was stronger for the post-treatment (first draft) writings of the ACMC group participants as compared to the writings of the participants in the SCMC group.

ABOUT THE AUTHOR

Iona Sarieva received her Master's degree in Russian Philology from Sofia University St. Kliment Ochridsky and post-graduate certificate for teaching English as a Foreign Language. After a number of years of language teaching, she continued her education in the Second Language Acquisition and Instructional Technologies doctoral program at University of South Florida. Her research interests are in the field of second language writing and computer assisted language learning.