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THE EFFECT OF COMPUTER-MEDIATED DISCUSSION ON L2 ACADEMIC

WRITING IN A COMPOSITION COURSE

FOR ESL STUDENTS

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by

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This dissertation research investigated the role of online discussion in students' experience in an academic writing class. As an intervention study, I implemented 20-minute-long online discussions at the end of every class period over a semester as part of required class activities and measured students' subsequent timed writings and their first and final essays to trace some possible influence from online discussion to their writing development. Topics for online discussions were organized according to course objectives and the day's lesson, with students developing subtopics reflecting their own interest according to the evolution of each discussion. These topics included theoretical concepts on academic writing as well as orthographical, lexical, grammar, and discourse-related inquiries. Participants included 10 treatment and 12 control students registered in two sections of a rhetoric and composition course designated for non-native English speaking students at a private university. This course was not an ESL class, but was part

of the regular composition course offerings, except that it was restricted to international students specifically.

Data sources included the treatment group's 26 online discussion transcripts, 12 sets of timed writings, individual interviews, field notes, two types of essays, and surveys. The control group contributed essays, one set of timed writing taken in the middle of the semester, survey responses, five class recordings, and an instructor interview. Data analysis was performed by using a mixed method approach. Results from online discussion transcripts revealed that treatment students made use of online discussions for their learning, shown through types and characteristics of language-, content-, and writing-related episodes and the semester-long changes and pattern in such talk. Interviews and survey data showed students' positive learning experiences and changes in their perception toward computer-mediated learning experiences over the semester. In terms of students' writing, the treatment group made significant improvement in their timed writings over the semester and also outperformed the control group in essay writing significantly, in five of seven categories on a writing rubric. The most significant finding from this study was the improvement of treatment students' writing scores over the semester. This study suggests the possible value of incorporating computer-mediated instruction in writing instruction as well as future research ideas that bridge research on traditional L2 writing and technology-enriched language learning.

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CHAPTER ONE

INTRODUCTION

Background

My focus in this study was on several aspects of online discussion tools in second language acquisition, with a special focus on the connection between computer-mediated discussion (CMD) and subsequent second language academic writing. I also addressed the affordances and influences of this synchronous discussion medium on students' second language writing development from three perspectives: First, from an *interactionist* perspective, I investigated the dynamics and evolution of the online discussions themselves, as revealed in various kinds of comments. Second, I explored interview and survey data to investigate students' experience in an academic writing class that used online discussions. Finally, I analyzed how online discussion influenced students' second writing growth by comparing essays of both a control group (with no online discussion) and a treatment group (with frequent online discussion).

Statement of the Problem

This research was initially inspired by the practical importance of (a) English as second language (ESL) learners' need to produce written forms in English in authentic contexts, and (b) pedagogical strategies and methodological issues associated with teaching writing in a second language. In this study, a particular emphasis was placed on the development of second language academic discourse, which requires disciplinary conventions, such as *topoi* (Wilder & Wolfe, 2009), and discipline specific rhetorical patterns. This aspect of second language writing development is particularly crucial to

learners who are learning English for academic purposes so as to be able to transfer their language skills as a tool to acquire academic content knowledge and become members of academic discourse communities.

This study also focused on second language writing proficiency development in a computer-assisted learning environment. Defining writing as a complex activity that involves multi-layered components, as well as sub-components requiring action on a number of levels, the connection that I wanted to make from computer-mediated discussion (CMD) and subsequent second language writing proficiency had a practical significance, I hoped, for language educators, researchers, and curriculum designers. Multi-layered cognitive processing during interaction and negotiation of meaning in CMD contexts necessitates different degrees and kinds of second language processing demands, and subsequently, reveals its effect on second language proficiency development. Paying tribute to the pedagogical benefits of CMD, such as its linguistic affordance, dynamic unfolding, and self-initiated self-repair, I explored the effect of CMD on writing development.

This study drew on the literature from SLA theories such as *interactionist* perspectives, on language and discourse socialization theories, second language writing development, and CMD. A literature review revealed that researchers have yet to study the effect of CMC on subsequent second language disciplinary writing as a productive language competency. Most importantly, the intrinsically sociocultural nature of online discussion and interactions among components in a *hybrid instruction* environment inspired me to apply an *interaction theory* approach to explore the cognitive and social

interactions as well as negotiation of meaning that took place in this learning environment. This study bears a theoretical importance as well, by applying an *interaction theory* view to a CMD environment, and in a *hybrid instruction* context.

Importance of Second Language Writing Development

As a multifaceted phenomenon, requiring proficiency in several language skills, writing itself is perceived as one of the most difficult tasks when it comes to second language production because it requires a strong command over target language lexis, syntactic structures, grammar knowledge, structural development, and genres in the target language discourse. In addition, writing also requires a synthesis of cognitive processes and language skills from the target language repertoire by converting input to output, through interaction with contexts, bootstrapping various kinds of language knowledge, to make them available for expression in the target language.

According to Archibald and Jeffery (2000), previous research on writing can be categorized into four major areas: (a) "the process of writing, which typically involves modeling cognitive operations, analysis of composing strategies, individual differences, and changes in process over time, (b) the product of writing which comprises text analysis, error analysis and contrastive analysis, and contrastive rhetoric, (c) the context of writing which consists of social construction, genre analysis, analysis of the individual's knowledge, motivation, and needs, and (d) the teaching of writing which involves learning processes, learning strategies, development of language proficiency, classroom procedures, and assessment" (pp. 1-2). Although interrelated, the primary focus of each of these areas has existed independently.

Furthermore, Haneda and Wells (2000) investigated writing in knowledge-building communities, addressing social aspects of writing as knowledge co-construction activities with others, which as a result create an iterative accumulation of transforming experiences as the learner/participant engages in purposeful actions with others. Adapting to the inherently social environment, participants also learn to utilize others as resources, such as assistance from more knowledgeable peers, the teacher, information from books and library resources, and technological tools.

SLA and second language writing interface. The second language writing field has received attention from SLA researchers as a venue to explore learners' language development grounded in the theories and constructs of SLA. However, some scholars have positioned the second language writing field in a broader perspective of second language acquisition. Ortega (2012) pointed to difficulties in building a connection between SLA and second language writing, labeling them as "unlikely partners" or "difficult interdisciplinary dialogues" (p. 404). This is because the goals of the two disciplines are incongruent: SLA pays particular attention to "additional language (second language) development," whereas the second language writing field focuses on "multiple-language written literacy capacities" (p. 404). Due to this difference, second language writing has not as yet garnered enough of SLA researchers' attention.

Not only are there these fundamental differences in ontology and epistemology between the two fields, the views of second language writing development also have differed substantially. SLA researchers consider second language writing as "literacy

and a culture-dependent, secondary manifestation of human language, a derivation of the primary oral capacity for language that all healthy individuals of our species share, allegedly regardless of culture, education, or walk of life" (Ortega, 2012, p. 405). On the other hand, second language writing scholars have foregrounded the distinction between writing in a first language versus in an additional language (Silva, 1993). Only then have these scholars established a connection between language learners' proficiency and composing competencies through empirical research (Cumming, 1989; Sasaki & Hirose, 1996).

Nonetheless, there is no doubt that SLA scholarship should address the importance of second language writing by paying closer attention to language learners' writing and acknowledging its value in understanding language acquisition. According to Harklau (2002), "much SLA scholarship overlooked second language writing events as rich sites where important additional learning takes place" (cited in Ortega, 2012, p. 405). In addition, as much as the need to apply SLA theories to second language writing development has been increasingly stressed (Manchon, 2012), there are several important aspects in second language writing research that substantially contribute to the field of SLA. For example, the importance of written corrective feedback and error correction (Bitchener & Storch, 2012; Ferris, 2010; Polio; 2012; Sheen, 2011) has been an ongoing issue that has produced prolific lines of empirical studies. In addition, contrary to Hyland's (2011) traditional *learning-to-write* perspective, Williams (2012) also discussed *writing-to-learn*, writing as a tool for learning both content and knowledge. Manchon (2009; 2011) differentiated between writing to learning content

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and writing to learn language and connected it to second language knowledge internalization. Williams (2012) also pointed out *pace* and *permanence* as two factors of writing that contribute to language development. Finally, second language writing is also a crucial venue for investigating the influence of technology on SLA (Chapelle, 2003; Garrett, 2009; Levy, 2009; Murray, 2005; Warschauer, 2007).

One more area needing discussion about the SLA and second language writing interface (Manchon, 2012) pertains to current views of the social-constructive nature of writing. The focus of writing in this view is the use of language in society. Rejecting the notion of identity resting solely in the minds of the individual, the emphasis is on individuals situated in a variety of contexts created within a society, as well as how they make forms and functions of communication available. Social contexts include the particular belief systems, pragmatics, and conventions, and thus the discourse community through which members can identify themselves. From this point of view, the literacy practice, as a result, is being shaped, influenced, and evolved throughout, as one learns ways of knowing and doing in a certain community. This view interprets second language writing from a social and political standpoint, thus enabling the application of SLA theories to second language writing more.

Technology and Second Language Writing

Among important areas of second language writing research mentioned above, technology has also shifted the dimensions of writing, including the social aspect, and transformed second language writing in language learning and teaching immensely. In this study, second language writing development was investigated in a *hybrid instruction*

environment (Bonk & Graham, 2006) in which an online discussion component was embedded in a traditional face-to-face classroom discussion. From this standpoint, this study stood to contribute to our understanding of how ESL learners as individuals participating in online discussions improve their second language academic writing individually, and also collaboratively produce a written product, through a recursive and incremental participation in a synchronous and collaborative mode of online discussion that is hypothesized to influence individual second language writing concurrently.

CMD Environment for Developing Second Language Writing

The combination of online discussion or computer-mediated discussion (CMD) and a regular face-to-face course, which is called *blended learning* (Bonk & Graham, 2006), or *hybrid instruction* (Cheng, Shaw, Schallert, & Tallent-Runnels, 2007), affords a different kind of learning experience and outcome for learners who share a common ground in a learning context. As a learner traverses through intrapersonal and interpersonal modes of communicational exchanges while being engaged in oral and written discussions throughout the course of a semester, this kind of integration or restructuring is expected to stimulate different areas of language skills, making participants' gap between their current language knowledge and input more prominent and noticeable. Subsequent internalization of language knowledge and the actual use of language skills are expected to vary individually and in response to each individual's interaction with contextual factors.

With an interest in examining the role of online discussion in second language writing development, I paid closer attention to previous studies that have reported

increasingly substantial pedagogical benefits of online discussion. For example, Chapelle (2008) proposed that computer-mediated learning environments establish a growing context for second language learners to cultivate their target language skills. Other issues related to computer-mediated discussion include synchronous and asynchronous modes of discussion, uptake and self-repair (Markee, 2000; Seedhouse, 2004), negotiation of meaning (Pellettieri, 2000; Smith, 2003; Tudini, 2003), computer-mediated corrective feedback (Seedhouse, 1999), interaction and participation patterns (Hosoda, 2006; Kasper, 1985; Markee, 2000; Mori, 2003; Seedhouse, 2005; Tudini, 2007), sociocultural aspects (Plough & Gass, 1993), visible language learning behavior (Pellettieri, 2000; Smith, 2003; Tudini, 2003), participant familiarity (Hosoda, 2006; Plough & Gass, 1993), intersubjectivity (Markee, 2000; Tudini, 2007), visual saliency and readability (Pellettieri, 2000; Schmidt, 1995, 2001), among others.

Despite the various topics that have been investigated so far, questions still remain about the effect of CMD on second language development, as well as what impact particular aspects and affordances of CMD have on participants as language learners. Socially constructed online discourse in CMD suggests a variety of issues that need to be explored. For example, monolingual as well as multilingual participation in CMD provides a window into interactions between native speakers (NSs) and non-native speakers (NNSs), and how they negotiate meaning and provide explicit and implicit feedback to each other. Online intercultural interactions in CMD taking place in a chat room have been shown to produce various conversational structures, discourse patterns, and learning behaviors (Tudini, 2010).

Given that synchronous online discussions are often compared to face-to-face oral discussions, I looked at a study on the effect of CMD on oral language development. Abrams (2003) addressed the effect of synchronous and asynchronous CMC on oral performance in German. The amount of speech, number of idea units and words, the lexical richness and diversity, and the syntactic diversity and complexity of learners' spoken language were measured to compare students in synchronous CMD (SCMD), asynchronous (ACMD), and control conditions. The result showed that only SCMD contributed substantially to subsequent quantity and quality of oral production. Even though Abrams' study suggested that CMD could influence participants' subsequent target language production in a variety of dimensions, more research seemed called for. Especially, what I felt was needed was more careful attention to the actual design of SCMD: What actually is being discussed during CMD in terms of topics, what task types are used, and what contexts influence the content of CMD, as well as how participants respond to the situated discussion environment.

CMD and second language writing development. In addition, due to its innate affordances, CMD provides many ways to encounter visible traces of written language produced by language learners. The affordances of CMD that exist on a continuum include *visual saliency* and *readability of the messages*, *processing time* (Choi, 2000; Smith, 2004; Warschauer, 1997), s*ynchronicity, persistence of transcript, size of message buffer*, and *message format* (Herrings, 2007). These factors characterize CMD as a solid venue for investigating second language acquisition (SLA) phenomena. The study of these factors not only enlarges SLA views of learning as a social process

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encompassing intramental and intermental cognitive activities but also provides the field with a better understanding of individual and collaborative learning behaviors in a dynamically evolving context.

Knowing these affordances of CMD, I came to develop the focus of this study further, nesting it within the field of CMD and second language writing development: How written language development, such as lexical, grammatical, syntactic, and discourse, can be fostered in CMD, with a consideration of what CMD can offer to language learners' actual and subsequent use of English, to meet various contextual demands in an authentic real-life and virtual target language culture.

Various types of talk in CMD and second language writing. Researchers such as Williams (1999), Loewen (2004), and Shekary and Tahririan (2006) have mentioned the need to pay attention to *language-related episodes* (LREs), the instances of attentional shifts from message meaning to message form during communicative and meaning-focused tasks. Swain (1997) argued that, through LREs, learners collaboratively solve linguistic problems, and as a result, they move beyond their current linguistic state. Although LREs provide a robust venue to capture instances of learners' language process and development, their primary foci are limited to forms, such as lexical, grammatical, and orthographical issues. Thus, there is a need for further exploration of, what I call, *content-related episodes* (CREs), which is closely related to Manchon's (2009; 2011) and William's (2012) view on *writing-to-learn* content. Such episodes allow learners to use language as a tool to gain new information or learn new knowledge, by moving beyond discrete linguistic forms of the target language itself to a

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discourse level. My goal was to examine the effect of CMC on subsequent second

language, connecting learners' participation and second language production in online

discussion to subsequent language use in real-life contexts, both institutional and

naturalistic.

Thus, this study was designed to build on Loewen (2005), Sotillo (2010), Yilmaz

(2011), and others, by closely examining LRE types, foci, and outcome, particularly

during SCMD contexts in an English as second language (ESL) academic writing course.

Furthermore, this study added the dimension of *content-related episodes* (CREs) and

writing-related episodes (WREs) and used discourse analysis to trace and describe

learners' development in SCMD, as well as how LREs, CREs, and WREs unfolded in

ESL learners' academic writing development. Its purposes included (a) identifying and

describing factors that lead to LREs, CREs, and WREs in SCMD, (b) deciphering the

nature and characteristics of each LRE, CRE, WREs, (c) connecting these episodes to

second language academic writing development, (d) providing instructional

implementation strategy and pedagogical suggestions to embed CMDs in a curriculum,

(e) providing learners and teachers with a solid venue to understand the developmental

and procedural aspects of second and foreign language acquisition, and finally (f)

illuminating learning as a social process made up of intramental and intermental

cognitive activities in a dynamically evolving context.

Purpose of the Study

My study focused on the connection between online discussion and students'

second language academic writing, approaching this connection as a developmental

process that occurs when ESL learners from a variety of language systems, with differences in logographic, syllabic, and segmental language systems, come together in a collaborative social learning environment. I investigated the kind of influence online discussion could have and how it related to students' orthographical, lexical, grammar, and discourse development in particular.

In terms of students' online discourse, I was curious about naturally emerging comments students would make and their evolution throughout the semester. Thus, I explored how each student contributed to the evolving nature of online discussion by initiating subtopics, making several conversational turns with various discourse moves throughout a discussion. I also investigated how students made use of online discussion by mutually creating learning experiences and co-constructing their knowledge by making inquiries of each other and responding to each other.

Moreover, by conducting interviews, I focused on the nature of students' in-depth experiences when they participate in a significant amount of online discussion: What process would students go through when they write during online discussion, what difference would exist between their individual writing and online writing with others, how they would perceive their online discussion as a tool for their learning, and whether they would see the utility value of online discussion. I also focused on each student's varying roles during online discussion and how learner factors that each student presented may influence their corporate learning experiences. I also explored how students described their learning experiences. By conducting this intervention study, I

hoped to discover a cumulative effect of online discussion on second language academic writing over the semester, especially when it is integrated with oral discussion.

As mentioned earlier, this study was a test of the effects of CMD on second language learners' subsequent writing proficiency development using an *interactionist* lens as an explanatory framework.

Research Questions

This brief literature review was meant to provide a rationale for particular research questions that guided my examination of the process of second language writing development, with a view to contribute to second language writing scholarship and SLA writing research. My research questions brought together the systemic influence of online discussion on second language writing viewed from an *interactionist* theory perspective, and the comparison of two writing courses with or without the online discussion component. Thus, the following research questions guided this study:

1. What are different types and characteristics of comments that students make in online discussions?

2. What is the nature of the experience of students who participated in online discussions and of their timed writings over the semester, and how do students describe their learning experiences from these class activities?

3. How do the timed writing scores of students who are in a hybrid instruction section with frequent online discussion change over the semester?

4. How does the writing of students enrolled in a class that incorporates

   frequent online discussions compare to the writing of students in a control

   section?

CHAPTER TWO

LITERATURE REVIEW

To explore the role of online discussion in students' development of their second language academic writing ability, this literature review will first address an *interactionist* approach to language development in SLA. This view was integral to exploring the many ongoing interactions during online discussions, especially in knowing how or whether this computer-mediated discussion (CMD) activity might influence learners' second language writing. Second, I will discuss previous literature on second language writing development, and, more specifically, *language-related episodes* (LREs), also known as *form-focused episodes* (FFEs), followed by how CMD incorporates these aspects from an *interactionist* perspectives. Finally, I will share literature on technology and writing in general.

Theoretical Framework I: Interaction Theory in Second Language Acquisition

One of the SLA theories relevant to this study highlights the facilitative roles of interaction in SLA. As Pica (1992, 1994) mentioned, *interactionist* theories view learners' interaction in various forms of target language (TL) discourse as facilitating language learning. From this perspective, comprehensible input and feedback that learners encounter during interactions become key factors to learners' language acquisition as well as subsequent use of the TL. Studies related to *interactionists'* perspectives are crucial because they reveal the interplay among comprehensible input, interaction, mutuality and reciprocity, which foreground knowledge co-construction and language learning process.

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Interactionists' Perspectives

Whether interaction facilitates SLA (Gass, 1997; Long, 1996; Pica, 1994) or what influence it might have on language learning has been an important issue in SLA. Researchers such as Hatch (1978), Long (1983, 1996), Pica (1994), and Gass (1997) have argued that "conversational interaction is an essential condition for SLA" (Lightbrown & Spada, 2006). These researchers have studied "the ways in which speakers modify their speech and their interaction patterns in order to help learners participate in a conversation or understand some information" (Lightbrown & Spada, 2006, p. 43). This view is particularly crucial when it comes to language learning grounded in sociocultural perspectives, which emphasize individual minds situated among others and as a result a higher level of mental functioning is achieved.

Furthermore, after examining 30 studies that investigated discourse of non-native English speakers, Long (1981) made the following propositions that highlighted various aspects of input: (a) "SLA is possible with unmodified input but modified interaction," (b) "modified interaction with unmodified input facilitates SLA," (c) "SLA is possible with modified input and modified interaction," and (d) "modified input and modified interaction together facilitate SLA" (pp. 273-274). Long (1983) agreed with Krashen's notion of comprehensible input as being one of the prerequisites for language acquisition, and he focused on the question of how input can be made more comprehensible. He further proposed that comprehensible input is required for SLA to take place, and modified input during modifying interaction can help to make input more comprehensible. Modified interaction not only includes "linguistic simplification," but

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also "elaboration, slower speech rate, gesture, or the provision of additional contextual cues" (Lightbrown & Spada, 2006, p. 44). This modified interaction makes input more comprehensible and as a result facilitates language learning.

Influenced by Long and Pica, Ellis (1991) added two additional aspects that influence interactions: (a) *tasks* that require the conversational partners to exchange information and modify their interactions while completing steps of the tasks with one another to facilitate more interactions, and (b) a *situation* in which the conversation participants shares an equal relationship with one another to afford more opportunities and reconstruction of interaction.

Importance of Interactionists' Perspectives

This section addresses previous research on *interactionists'* views of language acquisition by first addressing face-to-face and online discussion environments. Most previous findings related to *interactionist* perspectives were based on face-to-face communication (Long, 1991, 1996; Pica, 1992; 1994), whereas recent findings have focused on computer-mediated communication and have reported the effectiveness of CMC in promoting interaction (Kern, 1995; Ortega, 1997; Payne & Whitney, 2002). For example, the two studies I mention below, Ellis, Loewen, and Erlam (2006) and Loewen and Erlam (2006) used the same research design but gathered data in two settings, a face-to-face communication and an online synchronous environment. Research designs of these two studies caused me to explore differential affordances availed by these two different learning contexts and their effect on conversational

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interaction as well as interactional modification, which made input more comprehensible for learners.

Ellis, Loewen, and Erlam (2006) examined the effectiveness of implicit feedback (recasts) or explicit feedback (metalinguistic information) given during two communicative tasks to find errors in regular past tense used in the utterances. Two communicative tasks were given to three groups: implicit feedback (recasts) group, explicit feedback (metalinguistic information) group, and control group. The findings in this study revealed that the group that received the metalinguistic feedback performed better than both the recast and control groups on oral and grammar tests. The authors concluded the metalinguistic group received more explicit feedback in the midst of meaning-focused tasks, and this feedback was less obtrusive to ongoing activities, which resulted in a better registration of the past tense structure.

Loewen and Erlam (2006) conducted the same study in a synchronous online learning environment. In contrast to the findings from Ellis, Loewen, and Erlam (2006), result did not show any statistical significance in response to either type of feedback. The possible reasons for no significant results are as follows: (a) Past tense was beyond the level of beginning learners; (b) the online learning environment reduced closeness and immediacy of feedback that the students received; (c) thus, incidence of uptake was lacking or reduced. The study reported that other possible reasons might include the fact that the instructor had some struggles to keep the students on task.

Although the research designs of these two studies were not exactly identical, such as using participants from different English levels, the comparison of results from

two studies shed light on the differences between interaction, input, and various kinds of feedback given during face-to-face and synchronous online environments and how the two interaction environments may influence language learning differently.

Beyond these two studies, one more study of language learning in online settings contributes to understandings an *interactionist* perspective of language learning. Smith (2005) explored the interconnection among negotiated interaction, learner uptake, and lexical acquisition in task-based synchronous computer-mediated communication, by building upon previous uptake research (Ellis, Basturkmen, & Loewen, 2001; Lyster & Ranta, 1997). Although the study reported that the acquisition of target lexical items did not hinge upon negotiation patterns or learner uptake, it highlighted other indicators of language acquisition than learner uptake expanding the construct of interactional modifications.

Some previous studies have shown that interaction influences language acquisition to varying degrees. Statistical meta-analyses also reported significant positive effects of task-based interaction in the acquisition of target linguistic structures (Keck, Iberri-Shea, Tracy-Ventura, & Wa-Mbaleka, 2006), for interaction in general (Macky & Goo, 2007), and for corrective feedback, in particular (Li, 2010; Russell & Spada, 2006). The 28 interaction studies also provided evidence of short-term as well as long-term effects on language acquisition, as shown through large mean effect sizes across immediate and delayed post-tests. From these results, Macky and Goo (2007) concluded that interaction plays a strong facilitative role in learning lexical and

grammatical target items. These findings show that interaction plays an important role in language learning.

As Swain (1985) reported, when learners encounter more instances of breaking through communicational barriers, they are forced to produce comprehensible output to meet a variety of contextual and conversational demands to make themselves understood. In creating conversational interaction during class activities, an instructor should carefully choose linguistic items at the right level, as Krashen mentioned, items that slightly exceed the learners' current linguistic capability. These linguistic items, tasks, and activities should create instances in which learners are pushed beyond semantic to syntactic levels of proficiency to learn linguistic content at an appropriate learning level.

The influence of interaction research on second language acquisition has also reached to pedagogical aspects. Long's (1981; 1983) revised view of conversational interaction placed importance on corrective feedback during interaction with more detailed varieties of modified interaction. An instructor should also consider implementing tasks or activities that create more opportunities for learners to negotiate meaning, as well as situations in which learners are related relatively symmetrically.

Theoretical Framework II: Second Language Writing Development

The second part of the literature review includes literature on L2 writing development, including process and post-process theories and written error correction.

A Foreground of Writing research: Process and Post-process Theories

Composition studies have undergone many changes in the last fifty years, from an individual cognition to a more social view. Faigley (1986) addressed the fact that

emphasis in writing research has varied from an "*expressive view*" (p. 527) which focused on writers' authentic voice, "*cognitive view*" (p. 527) originating within a writer, to a "*social view*" (p. 528). As one of the initial process approaches in L1 writing research, Flower (1989; 2003) also proposed an *interactive* perspective between cognition and context and mentioned that writers developed a sense of themselves as writing while meaning within cultural and social contexts. From this social theory, the emphasis was placed on situatedness, collaboration, communication within discourse communities, and contributions to a larger conversation at an interpersonal plane.

These moves in writing research were also influencing second language writing research. Initially, L2 writing research was influenced by process theorists investigating the detailed composing process of an individual writer, including what the writer actually did while undertaking composing tasks, and perceived writing as an act of discovery (Arapoff, 1967; Santos, 1992; Zamel, 1982; 1983; 1985). By contrast, post-process theorists proposed that there is no one generalized writing process (Kent, 1999) and viewed writing as an inherently social and situated activity (Atkinson, 2000). In this view, writing situates the writer among public and it was considered a means for communication with others.

Written Corrective Feedback

One line of second language writing research pertains to the topic of written corrective feedback and its effect on second language writing development. The nature and role of errors and corrective feedback in SLA have been controversial for decades, under the influence of process-oriented perspective as well as the rise of Krashen's

(1982; 1984) SLA theories, which both underplayed the role of written feedback. Though still in dispute, it is certain that proponents of both second language acquisition theory and L2 writing research need additional information and intervention as well as different pedagogical approaches of writing instruction from those of native speakers (Ferris, 2010). Though controversy still remains as to whether error feedback helps second language student writers to improve the accuracy and overall quality of their writing (Ferris, 1999a; Truscott, 1996; Truscott, 1999), most studies on error correction in second language writing classes have provided evidence that students who receive error feedback from teachers improve in accuracy over time.

Corrective feedback has been investigated differently from SLA theorists' and second language writing researchers' points of view. According to Ferris (2006; 2010), SLA researchers focused on whether corrective feedback helps learners learn particular linguistic features. They conducted research within writing classrooms with no control group or pretest-posttest design or no clear tracking of particular student errors and the corrective feedback they received. By contrast, second language writing researchers emphasize whether corrective feedback improves the overall effectiveness of learners' texts, under more controlled experimental conditions, with one or more treatment groups or pretest-posttest-delayed posttest designs, with a focus on a few carefully chosen error types and feedback provided systematically. In the following sections, findings are illustrated from second language writing and SLA perspectives.

Second language writing perspectives. Some previous studies discussed different types and patterns of feedback, along with its effectiveness, and the dichotomy

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of form and content feedback. From a second language writing perspective, Ashwell (2000) examined the influence of four different patterns of feedback given to foreign language students and how it affected the quality of students' multi-draft writings: (a) content-form feedback in order, (b) form-content feedback in order, (c) form and content feedback mixed at both stages, and (d) no feedback. Findings showed no significant differences among three groups, which suggested neither the order of form versus content feedback, nor whether form and content feedback was separate, affected students' writings. However, as shown by the fact that all three feedback groups outperformed the control groups, this study reported that feedback helped the accuracy improvement, rather than the quality of content.

Another study based on CF in second language writing research is Chandler (2003), who investigated how various kinds of error feedback enhanced second language students' accuracy and fluency development. The primary focus of this study was to see whether corrective feedback given to grammatical and lexical errors on one assignment would enhance the accuracy of subsequent writing over one semester, without jeopardizing students' fluency or the overall quality of their writings. Findings showed that to reduce long-term errors, direct correction and simple underlining of errors worked better than describing the type of error and underlining it. Direct correction for accurate revisions was preferred by both students and teachers because it was more efficient for improving accuracy over several drafts, regardless of students' favorable perception of self-correction and teacher's preference for simple underlining of errors due to less time required. This study contributed to our understanding on the interplay

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between feedback and accuracy and fluency development.

The relationship between feedback patterns and writing development is also affected by the degree of explicitness of error feedback. Ferris and Roberts (2001) formed three groups that received three kinds of error feedback to examine the relationship between degree of explicitness and students' text self-editing: (a) Five different error categories were coded and marked; (b) these five categories were underlined only; (c) no feedback at all. Result revealed that, regardless of no major differences being found between the error-coded group and the no code group, the two groups who received feedback self-edited their texts significantly better than the group with no feedback. In addition, less explicit feedback seemed to help these students in their self-editing. This study showed that the degree of explicitness of error feedback affected students' ability to edit their own texts. By connecting feedback patterns and degree of explicitness of error feedback, this study shed light on the role of feedback in writing development from a second language writing perspective.

SLA perspectives. From an SLA perspective, Bitcher and Knoch (2008) used different kinds of written corrective feedback to investigate their impact on accuracy improvement in students' usage of English indefinite and definite articles. Students received direct corrective feedback, written and oral meta-linguistic explanations, direct corrective feedback and written metalinguistic explanations, direct corrective feedback only, and no corrective feedback. The study found when students received all three kinds of written corrective feedback, they showed better improvement in their use of English articles than those who did not receive written corrective feedback. This study

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examined written corrective feedback from an SLA perspective by paying attention to particular grammar items.

Similarly, Ellis, Sheen, Murakami, and Takashima (2008) also evaluated the use of the English indefinite and definite articles to compare how written corrective feedback affects the development of accurate usage of articles. To determine the effectiveness of corrective feedback, one group received focused corrections mainly on article errors only, and the other group received corrections for both article errors and other errors, over three narratives. The corrective feedback had a positive influence on both groups, as shown from pre-test to post-tests on an error correction test. This result was consistent in the second posttest that used a new narrative.

In addition to studies on corrective feedback and the development of linguistic features, Sheen (2007) examined the differential effect of two types of written corrective feedback and the influence of leaners' analytic ability on the effect of corrective feedback, when learning article usages. Three groups were formed for comparison: a correction group, a metalinguistic correction group, and a control group. Findings in this study showed that learners' aptitude for language analysis positively affected their knowledge in article usage. This study revealed different results on the immediate posttests and in the delayed posttests. Although the treatment group performed much better than the control group on the immediate posttests, the metalinguistic group performed better than the correction group in the delayed posttests. Moreover, when learners were receiving metalinguistic feedback, their language analytic ability had more influence on acquisition than the correction only group. Result showed that when

metalinguistic feedback was given to learners with high language analytic ability, it made written corrective feedback more strategically targeting a single linguistic feature to develop learners' accuracy. As shown above, written corrective feedback studies conducted from an SLA perspective contribute to our understanding of feedback and writing development, with attention to the development of particular linguistic features.

Theoretical Framework III: Technology and Writing

Empirical Research on Technology and L2 Writing

The next line of research I review is concerning technology and writing. Many areas of SLA have been greatly influenced by the development of information and communication technologies. New forms of literacy research as well as practices as byproduct of new technologies have informed us of a great shift in participatory dynamics in the classroom, and this shift has influenced teacher-student and student-student relationships, the nature and characteristics of interactions, and diverse usages of interactional media. Moreover, linguistic features, instructional activities, and pedagogical potentials afforded in technology-assisted classroom discussions have created a new approach to second language writing research.

Chapelle (2008) suggested that computer-mediated communication (CMC) research should also carefully analyze the contexts of communication, registers, pragmatic knowledge, and knowledge of the discursive and interactional features of communication in technology-mediated environments. It is also important to note that social and linguistic practices of online communities and environments are shaped by users for particular purposes with specific participants in different contexts (Lam, 2004;

Thorne, 2003, 2008). As such, understanding how participants shape the discourse of online communities is of fundamental interest for second language writing research on existing, emerging, and future CMC tools.

Technology and the writing process. Technology has had a tremendous impact on traditional and process-model-based writing research. Prior to technological intervention in second language writing research, most data elicitation included a think aloud protocol and paid particular attention to the revision process. As one of the initial attempts to intervene in writer's thinking process while composing, I considered Zamel's (1985) study of advanced ESL students as providing important insights into the composing process. The study revealed that, in terms of the writing process, skilled ESL writers first delineated their ideas, explored and clarified ideas, and attended to language-related issues. By emphasizing writing as being a process of discovering and creating meaning, this study illustrated how students were learning from the actual writing itself while exploring and generating their thoughts, and what effect second language factors had in this process. It emphasized the composing process through which writers make meaning and communicate with others by establishing a relationship with imagined readers.

As one of the more recent process studies, Sze (2009) investigated an ESL student's revision processes at the in-process stage and at the between-draft stage. The student revised in response to written feedback given during two writing assignments between process and draft stages. Results showed that the participant made revisions more at the surface level when working on his own than at the

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structural and content level in general, whereas, in response to written feedback, he made more revisions and higher-level revisions. Topic familiarity did not have an effect on the student's revision patterns, whereas his attitude toward revision and its strategies were affected by the teacher's focus on form.

Previous research has shown that technology has shifted the writing process. Arslan and Sahin-Kizil (2010) examined how blog software can facilitate English language learners' writing process. The findings suggested that students in blog-integrated group outperformed those in processed writing instruction in the regular classroom. Results based on students' written works confirmed the potential use of blog software to promote effective writing. As another process based study using technology, De Smet, Brand-Gruwel, Broekkamp, and Kirschner (2012) focused on the effect of electronic outline tools on argumentative writing, by focusing on the final written product as well as the detailed writing process. Results revealed that electronic outlining enhanced writing performance and the way participants presented the argumentative structure. Process data also suggested that whereas students' planning and reviewing were not affected by outlining, the outline tool increased total writing time. As shown above, the influence of technology on the writing process is noteworthy.

Among other computer-assisted language learning (CALL) tools, I want to address in this section computer-mediated discussion (CMD) as a tool for second language writing development. I chose CMD because current research on second language writing with various CMD research designs have shown the potential and affordances of CMD as a tool of computer assisted language learning (CALL), and the

benefits have proved to be substantial, for language development in general and second language writing development in particular. In addition, Chapelle (2008) proposed that computer-mediated learning environments establish a growing context for second language learners to cultivate their target language skills. When strategically embedded into a traditional curriculum, components of CMD, such as real-time synchronous online chat, as well as asynchronous online discussion, provide learners and teachers with a solid venue for understanding the developmental and procedural aspects of second and foreign language writing.

What is particularly useful about CMD settings is that it provides a medium with which to communicate, interact, and exchange information with others. Because typing skills are one of the rudimentary components of computer literacy and savviness, CMD helps participants type fast and develop cognitive fluency in the target language, and is one of the benefits of CMD tools in second language writing development. Moving beyond an individual-based process approach, with its emphasis on individuals going through the process of revising several drafts, CMD also brings participants into a post-process, strategy training approach. In a CMD setting, writers are engaged in interpretive and reflective acts, and writing becomes a social behavior, which is congruent with the post-process approach of writing. Through CMD, learners can co-participate in collaborative knowledge co-construction through interaction and negotiation of meaning.

Influence of CMD on Writing Development

Previous studies have reported on the differential affordances of CMC tools as media for writing practice and also illuminated their potential for second language writing development. To understand possible factors that influence learning outcomes, I address in this section the affordances of CMD for L2 writing, the influence of online task, followed by technology and writing process. I also discuss how the teacher's instructional discourse and specific language strategies in online conversations influence students' writing development, and I finish with a section on the influence of technology on writing process and collaboration.

Affordances of CMD for L2 writing development. Considering the benefits and affordances of CMD mentioned above, I review here some research designs that used CMD tools to investigate second language writing development. Multi-layered cognitive processing during interaction and negotiation of meaning in CMD context necessitates different degrees and kinds of second language processing demands, and subsequently, illuminates its effect on second language proficiency development. In investigations of the benefits of CMD, such as its linguistic affordance, dynamic assessment, and self-initiated self-repair, the effect of CMD on second language writing development has been investigated with research designs that have focused on different aspects of writing development with a variety of CMD tools. For each study mentioned below, I will mention lessons I learned from the study to enhance my dissertation's research design and data collection. I will also justify my recommendations with findings from the literature.

Timing. Whether delayed or online, various aspects of pre- and post- message composing during CMD reveal an ongoing interplay between timing and the outcome of students' contributions during discussions. As an example, Sauro and Smith (2010) explored synchronous online discussion by focusing on linguistic complexity and lexical diversity of both overt and covert second language output. These researchers captured deleted portions of the second language output in the process of composing online discourse through video enhanced chatscripts produced by 23 participants. The findings showed that chat output with post production monitoring, evidenced by time stamps marked next to each comment contributed by participants, displayed significantly greater linguistic complexity and diversity than chat output that did not exhibit similar evidence of online planning. The authors proposed that when participants first considered message content and then attended carefully to message formulation engaging in pre- and post- production monitoring, pre-task planning, and moment-by-moment online planning during task performance, the complexity and accuracy of second language performance increased.

These findings suggest that second language learners use moment-by-moment planning time afforded by the chat to engage in careful production and monitoring. From this study, I learned to (a) consider planning time afforded during synchronous online discussion and, more importantly, (b) connect it as a factor that contributes to complexity and diversity of learners' second language written output. For my study, I added planning time as one of the factors attributable to participants' second language written production when I considered the dynamics of online discussion. This is also

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supported by Yuan and Ellis (2003) and Ellis and Yuan (2004) who addressed the benefits of increased online planning time in second language performance.

Feedback and the teacher's role. In addition to wait time or intervals between messages, studies that investigated feedback during online discussion and its impact on second language writing are also important. In terms of feedback during online discussion, Chiu and Savignon (2006) conducted a case study to investigate how two EFL adult writers in an online learning environment developed their writing through feedback and revision. These learners received content-based feedback followed by form-focused feedback in a multidraft composing process. Findings of this study showed that the learners revised their writing substantially more when they received content-based feedback than form-focused feedback. The content-based feedback also caused learners to produce greatly increasing amounts of *information units* (Savignon, 1972) in their text, than form-focused feedback did. In addition, Chiu and Savignon examined the negotiation of meaning during the feedback and revision process through discourse analysis. From this study, I learned about research design with content-based and form-focused feedback, and how its impact on writing development was revealed in multiple draft composition.

Technology also influenced the interplay between a teacher's role and students' learning in a classroom. As Meskill and Anthony (2005) examined, when a teacher utilized online teaching strategies for a class that had CMC for language practice, it helped the teacher solidify pedagogical interventions and created a classroom that incorporated authentic and student-centered activities. Findings of this study reported

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that CMC afforded opportunity for both teacher and students to examine the language being used in the online conversation and characterize effective instructional discourse during online conversations, which consequently affected students' online written discourse development. CMC shifted the dynamic of a classroom by influencing the role of a teacher.

As Britta Seet and Quek (2010) mentioned, CMD serves as a mindtool that helps one perform higher level cognitive activities. With benefits and also challenges in implementing this technology medium in mind, when it comes to implementing CMDs into a writing classroom or a research setting, how the tasks and participants are organized into existing writing curriculum is also important. As Comas-Quinn (2011) addressed, teacher cognition also plays an important role in fostering and producing learning opportunities in CMC setting.

Interaction and collaboration. From an *interactionist* perspective, there is a need to elaborate participants' written discourse during online discussion. Among other coding systems, I used *language-related episodes* (LREs) to consider instances of learners' focus on grammatical, lexical, spelling, discourse, or pronunciation form (Swain, 1998; Swain & Lapkin, 1995; Williams, 1999). This has also been called *focus on form episodes* (FFEs) (Smith, 2005, p. 38) during communicative activities in the target language. LREs are defined as episodes or incidences where a language user turns his or her attention from communicative activities to language form, such as grammar, lexical meanings, or orthographical issues, and these episodes are relevant to second language writing development.

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Shekary and Taririan (2006) explored whether the hybrid nature of synchronous computer-mediated chat promotes the noticing of target language forms and thus, stimulates second language acquisition effectively. The findings of their study revealed that online negotiation facilitated more LREs than offline, face-to-face settings. As shown from both immediate and delayed posttests, the learners were able to retain more LREs and responded more correctly, and this showed that online negotiation strengthened their noticing, retention, and acquisition. Shekary and Taririan used Loewen's (2005) framework for characteristics of LREs: "type (reactive, preemptive), linguistic focus (grammar, vocabulary, spelling), source (code, message), complexity (simple, complex), directness (direct, indirect), emphasis (light, heavy), timing (immediate, deferred), uptake (uptake, no uptake), successful uptake (successful, unsuccessful), response (provide, elicit)" (p. 562). To measure the effect of LREs on second language writing development, I derived an analytic framework in my dissertation based on these two studies.

For my dissertation research, I analyzed online discussion transcripts according to Loewen's (2005) framework to categorize characteristics of LREs with more elaborated details as well as a comprehensive scale to organize LREs in written discourse. However, even Loewen's (2005) study did not include *discourse* as one of LRE foci, and I added discourse level analysis by adding additional categories, such as *content*- and *writing-related*. This type of detailed analysis gave attention to forms, lexical meanings, and grammar structures of written discourse.

Not many studies mentioned so far have a research design in which authors had pre- and post- test design to measure pre- CMD writing behavior or level, during CMD, and post- CMD writing scores. Previous studies have focused on analysis of the transcripts themselves (e.g., Sauro & Smith, 2010, Smith, 2003; Loewen, 2004; Shekary & Tahririan, 2006; Williams, 1999; Yilmaz, 2011), and there is a need for research that measures the subsequent language use and improvement in L2 writing. Although some studies have discussed revision-related discourse that occurred during the feedback and revision process occurring in online peer response (e.g. DiGiovanni, & Nagaswami, 2001; Liang, 2008; 2010) or the impact of e-feedback on the revision of L2 writing (Tuzi, 2004), these are still few and have not so far included analysis of the impact of an online discussion activity among students, as shown by frequent measures of written language production, and by a pre/posttest design using treatment and control groups.

Moreover, many noticing and uptake studies have paid most of their attention to discrete linguistic features only and did not measure subsequent writing improvement or development at a discourse level. Likewise, these previous studies, as described above, have also paid more attention to discrete grammatical, lexical, and orthographical types of LREs only, and less to discourse level episodes.

Socially constructed online discourse in CMD suggests a variety of issues that need to be explored. For example, monolingual as well as multilingual participation in CMD provides a window for studying the interactions between native speakers (NSs) and non-native speakers (NNSs), and how they negotiate meanings and provides explicit and implicit feedback. This online intercultural interaction in CMD produces various

conversational structures, discourse patterns, and learning behaviors (Tudini, 2010). My

dissertation focused on second language writing proficiency development in a blended

learning environment. Defining writing as a complex activity that involves multi-

layered processes, as well as sub-components requiring action in a number of levels, the

connection that I aimed to make from CMD and subsequent second language writing

proficiency has a practical significance for language educators, researchers, and

curriculum designers. Because the focus of my dissertation research is second language

writing proficiency development and how it can be optimized, I also tested a

modification of traditional process-oriented writing pedagogy, with its planning, pre-

writing, and revision sequence; the production and work on multiple drafts; and the use

of writing conferences.

Due to technological innovation, second language writing research has come to

include a different kind of medium for writing and made co-participation and

collaboration of multiple writers possible. The next study that I reviewed accentuates

how technology enabled the investigation of collaborative writing processes. Kessler

and Bliowski (2010) examined students' involvement in a wiki project. The focus of

this study was to explore how or whether a long-term wiki-based collaboration affects

individual and group behavior as they paid attention to meaning, especially in terms of

students' collaborative autonomous language learning abilities. Findings from the

analysis of individual language behaviors, group collaboration, and individual language

acts showed that a flexible learning environment benefited student interaction and

language use. The study also addressed that the process in which students were

involved as they wrote collaboratively was more important than the quality of the final wiki. This study using wiki also showed how technology made a change in the collaborative writing process.

Similarly, Dobao (2012) investigated the benefits of collaborative writing tasks in online environments by comparing the performance of the same writing task by groups of four learners, pairs, and individual learners. The results explained the effect of the number of participants on the fluency, complexity, and accuracy of the written texts produced, as well as the nature of the oral interaction between the pairs and the groups as they collaborate throughout the writing process. Groups produced significantly more accurate text than pairs, but both were similar in terms of accuracy and complexity. On the other hand, individuals produced considerably longer texts than pairs or groups, even though texts written individually were significantly less accurate than those written in groups and also than those written in pairs. However, these differences were not statistically significant. Overall, being more successful at solving their language-related issues, learners working in groups of four focused their attention on language more often than learners working in dyads. This study revealed the effect of collaboration through technology on second language writing development.

Task and online. In addition to feedback and teacher role as well as interaction and collaboration, writing development through online environments seems to hinge very much on the nature of the tasks students are required to perform. Some studies that investigated LREs during CMD and writing development have looked at how tasks during online discussion affect the characteristics and amount of LRE.

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Researchers examined how task implementation or task-based discussion during CMD influenced learners' contextually relevant discourse use (Collentine, 2009), focus, type, and outcome of language-related episodes (Loewen, 2004; Shekary & Tahririan, 2006; Williams, 1999; Yilmaz, 2011), or learners' negotiated interaction and focus on form (Alwi, Adams, & Newton, 2012).

Yilmaz (2011) reported on how task complexity in online discussions affected the degree to which participants in the discussion paid attention to form, and thus produced LREs. Two jigsaw and dictogloss tasks were implemented, and the amount of each LRE types, foci, and outcomes were measured. Task implementation has to be strategically planned and well thought out to maximize the existing writing curriculum and learning outcome and to add more instructional value. By focusing on task types and the effect of task on the number and characteristics of focus-on-form instances, Yilmaz showed that the dictogloss task elicited a higher number of LREs than the jigsaw task. Tasks also displayed some differences with respect to the characteristics of LREs. Whereas the dictogloss was characterized by orthographic, solved correctly, and negative feedback LREs, the jigsaw was characterized by unresolved LREs. The results focused on the influence of how much information one can process on one's task performance (Skehan, 1998).

Even though Yilmaz (2011) related task complexity to LREs, the characterization of LREs was not very elaborate. Yilmaz categorized LRE type as (a) request for assistance, (b) self-correction, (c) metatalk, and (d) negative feedback, LRE foci as orthographical, lexical, and grammatical, and LRE outcome as solved correctly,

solved incorrectly, and unresolved. However, Yilmaz (2011) did not look at whether or what kind of learning was happening or how much participants had retained from the LREs. Interaction structure includes much more details than LRE type, focus, and outcome measure, thus a more elaborated coding scheme seems necessary to elicit precise results of the effect of interaction and LREs on language development.

In another study, Alwi, Adams, and Newton (2012) explored how tasks during online discussion affect participants' writing development by examining the degree of task structure and provision of language support and whether synchronous text chat influenced learners' attention to linguistic form. Findings from the analysis of textchat performance and post-task group interviews showed that learners focused on language expression more and showed more collaborative moves to language errors, with tasks implemented during writing performance. Results also indicated that when participants were given language support and guidance prior to a task, such as explanations on how to perform the task, they were less burdened with demands from following task-related procedures and able to focus more on the accuracy of their language through language-related episodes on form and meaning in textchat writing. This study showed the important role of a task in second language writing development during online discussions.

Based on my literature review, pilot study, and synthesis of previous writing research, including uptake and noticing, corrective feedback, and CMD research, I designed a study to evaluate and compare pre-test writing task, online discussions implemented in every class, followed by weekly timed writing as immediate post-test,

and end-of-the-semester final controlled research paper as delayed post-test. I also explored the potential accumulative role of online discussion on students' writings in this study by analyzing online discussion transcripts, students' timed writing assignments, and essays. Analyses of field notes, interviews, and demographic survey were also used to triangulate the data.

The studies on second language writing, written corrective feedback from an *interactionist* perspective, and the work on computer-mediated discussion and technology and writing mentioned so far do not fall into exclusive categories unrelated to one another but are interconnected and essential to understand possible future developments in second language writing research. By understanding both theoretical and empirical studies that represent each strand of writing research, one can have a broader perspective on second language writing research, as well as on what it means to write in second language. As mentioned above, with technological development, some new aspects of writing, such as collaborative writing, and writing in an online environment, are also becoming more crucial areas of research. Writing is not merely limited to an individual act in a natural setting or in an academic environment, but becomes a medium that incorporates multimodal ways of forming and expressing one's ideas, thoughts, and philosophy in a social context with a view to be read, interpreted, and accepted by other members in a society.

CHAPTER THREE

METHOD

To address the research questions, I chose a mixed method research design, including both quantitative and qualitative data analysis, to answer the research questions of the main study. The following section begins by describing details of a pilot study that I conducted prior to the main study, through which I developed coding schemes for online discussion transcripts and gained ideas for data collections and their measures, which are then presented following the pilot study description.

Pilot Study

In the spring of 2012, I conducted a pilot study with a class that met in a computer lab once and also in a regular classroom twice per week, respectively. Prior to the pilot sessions, the instructor of this class and I created a lesson plan to implement online discussion, along with discussion topics and other instructional activities during online discussion, in a way that also complemented the days' learning objectives.

Participants and Setting

A total of eleven students participated from various linguistic, ethnic, and cultural backgrounds, with ages ranging from 19 to 45 years. Participants in this class were from Turkey, Saudi Arabia, Iraq, and South Korea. These participants' main goal was to pass a minimum English proficiency requirement while preparing applications for graduate programs in the United States.

Data Collection

Data collection took place over the course of one semester, from January 2012 to May 2012. This class met on Mondays, Wednesdays, and Fridays in a computer lab or a classroom in the ESL Services building, and the pilot study was conducted on Wednesdays and Fridays.

During the first two weeks of the semester, I visited every class session to get a sense of the overall atmosphere of the class, in addition to participants' activities and engagement, the teacher's role and her pedagogical strategies, course content, assignments, and curriculum. Prior to these observation visits, the instructor of the class and I agreed that I would present my research objectives to the participants with a view to introducing the details of what would be required of them in case they agreed to participate in the study. From the second month on, classroom observation took place on Wednesdays and Fridays when explicit instruction on academic writing and grammar lessons was given by the instructor. Timed writings occurred on Fridays as a required part of the course, and online discussion took place on two Fridays in April as pilot sessions.

Data Sources

Data sources included six online discussion transcripts collected from three groups per session for the two online discussions, and students' weekly timed writings, field notes, and audio recordings. Artifacts, such as a syllabus, timed writings, handouts, timed writing logs, grammar practice sheets, and final research paper guidelines were also triangulated with other data mentioned above. For this pilot project, I also used a short demographic survey.

Synchronous online discussion transcripts. A total of six discussion transcripts were collected during the two sessions of online discussion (three groups each session) with a three-week interval between them. To include participants who tended to be marginalized and were not wiling to participate in discussion, I assigned participants to groups of three or four for each discussion session. At the end of each discussion session, a record of the discussion remained saved automatically and was accessible to all account holders for future use.

Weekly timed writings. At the end of the writing class on Fridays, students were required to engage in a timed writing session in which they were given 30 minutes to respond to writing prompts. The topics of the writings prompts covered academic issues, and each participant used a desktop computer in the lab, using Moodle or a Microsoft Word document to compose a paragraph. Before leaving the class, each student uploaded his or her first draft so that the instructor could grade it. On the basis of the instructor's written feedback, students filled out a timed writing log in which they recorded the number of words and error percentage for each timed writing. After revision, participants uploaded their final drafts to Moodle, and I was given access to download these final drafts from Moodle for data analysis.

Class observation. I observed the class, from Monday to Friday, and took field notes and audiorecorded class sessions to record interaction patterns among participants and the instructor, classroom activities, and individual linguistic variables, contextual factors, instructional details, and online discussion components. For classroom

observation, field notes were revisited daily to characterize recurring patterns of teacher-student and student-student interactions.

Data Analysis

For the pilot study, I focused on online discussion transcripts and students' weekly timed writings. I not only applied *language-related episodes* (LREs) that had already been developed in the previous literature, but also found instances that I labeled as *content-related episodes* (CREs), which paved the way for me to code the other writing-specific instances of comments as *writing-related episodes* (WREs) in the main study. Details are presented below.

Online discussion transcripts. I used both a deductive and inductive *interpretivist* approach (Corbin & Strauss, 2008). I initially focused my analysis on deductively applying LRE codes, as I worked to understand the content of each discussion. My analysis also allowed for inductive and naturally emerging patterns in the data, and I found several instances in which students discussed not linguistic items themselves but conceptual information using the technical terminology and jargon representing their major field of study. I developed a code, *content-related episodes*, from this analysis. I then made coherence graphs (Schallert et al., 1996) from the online discussion transcripts to see how comments were interconnected (see Figure 1).

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Posting #					
48	11:54				
49	11:54		Mahdi		
50	11:54				
51	11:55				
52	11:55		Mahdi		
53	11:55		Mahdi		
54	11:55		Yafiah		
55	11:56		Mahdi		
56	11:56		Haydar		
57	11:57		Yafiah		
58	11:57	Haydar			
59	11:57			Mahdi	
60	11:57			Mahdi	
61	11:58	Haydar			
62	11:59	Haydar			
63	11:59				Mahdi
64	11:59				Yafiah
65	12:00	Haydar			
66	12:00				Yafiah
67	12:00				Mahdi
68	12:00	Haydar			
69	12:00				Yafiah
70	12:01				Mahdi
71	12:01	Haydar			
72	12:01	Mahdi			
73	12:01	Haydar			
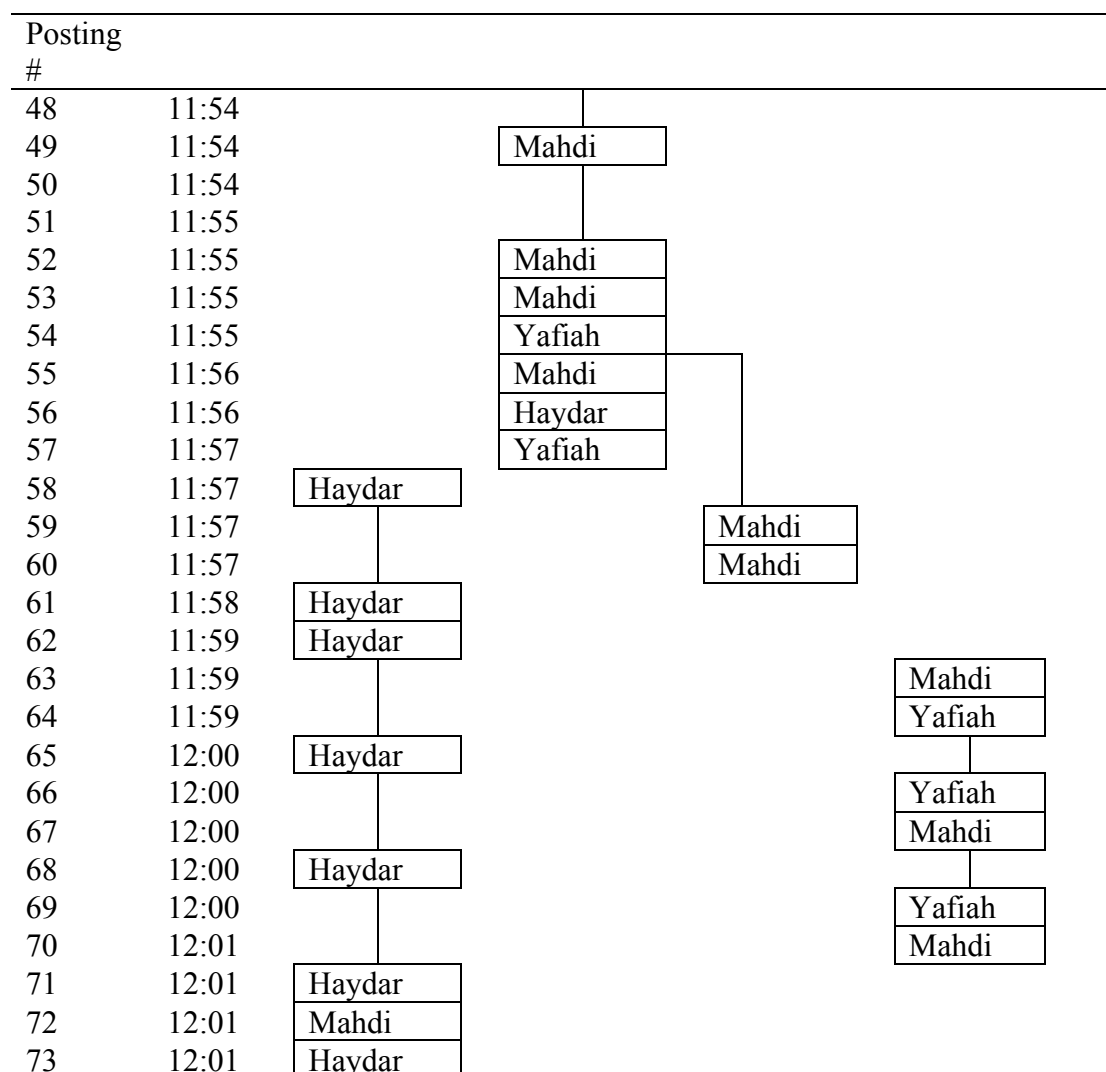
Figure 1. Excerpt of the Coherence Graph from a Pilot Study Discussion

Timed writings. The descriptive analysis of timed writings took the form of counting words and errors. I used descriptive statistics to report the number of words and error rate per timed writing for each participant.

Results of the Pilot Study

Findings in this pilot study entailed rich instances of *language-related episodes* and *content-related episodes*, and the data from online discussions were categorized

according to LRE foci. I described LRE types and looked to see what happened after each instance. CREs were described according to how they evolved throughout the discussion, and the ways topics developed and knowledge was co-constructed among participants.

Online Discussions

  Language-related episodes (LREs). The following describes orthographic, grammatical, and lexical foci of LREs.

  Orthographical focus. As defined by Swan and Lapkin (1998) and Yilmaz (2011), LREs labeled as *orthographic* denote instances when learners questioned how to spell words correctly.

  During the second online discussion, a TOEFL essay writing prompt was given by the instructor. The participants were formed into groups that allowed them to discuss different countries' practices related to the death penalty. At their request following the first online discussion, participants had been grouped into smaller groups, with only two or three individuals per group. The second discussion displayed a rich development of topic with each participant's country-specific practices on the death penalty as well as his or her personal opinion. With this topic shift, the types of questions that any one participant asked and the answers provided by that the others also differed.

   April 27, 2012 Group 1
  20 Yafiah: but if people kill somebody, but he or she have some reasons like
     protect our children. It should be use
  21 Haydar: if government doesn't use the capital punishment
     the number of murderer will incressed
  22 Jawdah: however if that an accident they should pardon
  23 Jawdah: right Yafiah

24 Haydar: you mentioned a good point Jawdah
25 Yafiah: yes I agree with jawdah
26 Jawdah: (00)
27 Yafiah: but undortunately, mt overnment banned the death penalty
28 Jawdah: hhhhhhh
29 Haydar: I think capital punishment is a complex issue
30 Jawdah: but if the crime is danger I think that government must kill a murderll
31 Jawdah: a murder
32 Sookhee: even if someone is murderer, all contury has prison for them.
33 Al Safi: the death penalty will not be judge by one person
34 Sookhee: contry
35 Sookhee: sorry country....;)

   In this part of the discussion, Yafiah in line 20 used the verb "kill" in relation to

the topic, the death penalty. In lines 30 and 31, Jawdah came up with the word "murder,"

but misspelled the word as "murderll." She self-corrected the word as "murder."

Sookhee started using the word "murderer" in line 32, introducing a grammatical error in

her sentence. In lines 32, 34, and 35, Sookhee reiterated the word "country" three times,

and in her third trial, she finally spelled it correctly. This conversation continued to

develop, and Sookhee corrected her spelling, apologizing for her wrong use of the word.

   Grammatical focus. In the two online discussions, LREs that focused on

grammatical issues, in which learners were asking questions about "the form of

grammatical categories, such as comparative and superlative forms, plural and possessive

markers, possessive pronouns, sentence structure, subject-verb agreement, and verb form

and tenses" (Yilmaz, 2011, p. 121), were also prominent.

   April 6, 2012 Group 1
17 Yafiah: i didnt know anything Mahdi your topic, but i have some ideas Haydar's topic.
18 Yafiah: can Mahdi explain us to your topic?
19 Mahdi: my topic is about how we can find out other kind of materials by

nono alloys
21 Mahdi: be combine two or more kind of materials together
22 Mahdi: by

When Yafiah started her metatalk in line 17 about how difficult Mahdi's and

Haydar's topics were, Mahdi started explaining his topic. Here, Yafiah's comment in

line 17 was fulfilling what Wood and Kroger (2000) would call "multiple functions" (p.

108), implying several intentions in her comment. In lines 21 and 22, Mahdi noticed his

error in using "be" instead of "by." As he self-corrected his grammar by changing "be"

to "by," he still seemed unaware of the fact that the preposition "by" takes the gerund

form of the verb, "combining," as an object. Here, his halfway successful attempt for

grammar correction was noticed.

April 6, 2012 Group 1
33 Haydar: Yafiah, could you explain you topic
34 Haydar: your topic
36 Yafiah: i chose finding petroleum process because my research interest is
      well logging and it is interested finging\petroleum
38 Yafiah: and i want to learn some extra information

In lines 33 and 34, Haydar realized that he had used "you topic" instead of "your

topic." In addition to Haydar's focus on grammar, Haydar and Yafiah were also

requesting particular information, and the request was solved correctly. This showed that

Haydar noticed his misuse of the possessive pronoun "your," but did not notice other

grammar issues, such as his misuse of gerund or passive forms of the verbs.

Lexical focus. In LREs that focus on *lexical* issues, learners are asking

"questions about the meaning of a word" (Yilmaz, 2011, p. 121).

April 6, 2012 Group 2
18 Sinan: could you explain meaning of word seismc?

48

19 Abdul: What does it mean in other words?

Because the topic of the first discussion was to discuss the students' final research

topics, many technical terms were introduced during the conversation. Sinan asked the

meaning of the word "seismc," and Abdul was also wondering about the meaning of the

same word.

> April 6, 2012 Group 2
> 21 Sinan: Ok, my topic is about Narrators classification in Novel
> 24 Hatim: how can ou do clasification ?
> 25 Abdul: what does narrators mean
> 26 Sinan Ok, WE have many types of Narrators in Novel
> 27 Abdul: please, explain more
> 29 Sinan: Narrator is a persone or a character who tells you a story in novel
> 32 Abdul: nice, then what are the kinds of that?

In this conversation, Sinan started talking about his topic by using the phrase

"Narrators classification in Novel," which inspired questions from Hatim and Abdul,

with Abdul requesting more detailed information after Sinan's answers. Here,

participants seemed to gain the meaning of the word by explicitly eliciting the direct

meaning, and then, requesting further relevant information.

Content-related episodes (CREs). The episodes that were *content-related*

included instances in which participants were actively co-constructing their

understanding or knowledge of certain topics or issues of discussion using the target

language. I considered this active development of the topic to be a sign of the learners'

expansion beyond their language gaps, such as LREs, to focus on the fluency of the ideas

by engaging themselves in various negotiations of meaning during the conversation.

In the following lines, Mahdi asked Haydar about his topic, and Yafiah requested a simpler or more detailed explanation by using the word "narrow." Here, their focus was on why the topic was important and what made the topic crucial rather than asking or talking about language or asking explicit or implicit questions about language use (Swain & Lapkin, 1998). As Haydar's explanation continued, Yafiah continued to ask questions by using expressions such as "yes but how can it develop?" in line 57, whereas Mahdi asked a further question by saying, "do y mean you will invent sth?" Haydar gradually narrowed down his topic so that the participants could understand his explanation: country, importance of education, which leads to the development of health and economics, and finally developing the development of math instruction in universities.

April 6, 2012 Group 1
49 Mahdi: Haydar explane more about your topic
51 Haydar: Yes, sure for any country
52 Mahdi: what will you do
53 Mahdi: be more specific
54 Yafiah: yes Haydar can you give some narrow thing about your topic
55 Mahdi: even i can hep my country also
56 Haydar: because developing education leads to develop other important
      things, like health and economic
57 Yafiah: yes but how can it develop?
58 Haydar: you are right Yafiah
59 Mahdi: do y mean you will invent sth
60 Mahdi: i agree with y
61 Haydar: so I will talk about developing teaching math in universities
62 Haydar: also, the developing of education must be for all topics
65 Haydar: is very important
68 Haydar: especially for our countries
71 Haydar: Because petroleum is the important source of inergy
72 Mahdi: i understand Haydars topic
73 Haydar: energy

Finally, in line 72, Mahdi acknowledged that he understood Haydar's topic by

iterating a metatalk, whereas in 71 and 73, Haydar self-corrected his spelling mistake.

Timed writings. As shown in Table 1, the number of words produced during the four timed writings per each participant was counted. Online discussions were scheduled right before timed writing 9 and timed writing 12. The mean number of words increased from 123.3 to 170 between timed writing 8 and timed writing 12 (see Table 1). Participants were gradually producing more words per timed writing across these four timed writings.

Table 1
Mean Number of Total Words per Timed Writing

TWs	8	9	10	11	12
Mean	123.2	189.1	174.7	214.9	170.0

To determine the participants' accuracy development, the error rates for these timed writings were recorded. The total number of errors was calculated according to timed writing error number reference chart (see Appendix A), 22 error categories noted in the frequency log (see Appendix B), and errors were divided by the total number of words to arrive at a percentage. The mean percentage of errors decreased from 17.0 to 10.6 (see Table 2).

Table 2
Mean Error Rates per Timed Writing

TWs	8	9	10	11	12
Mean	17.0	14.6	14.3	10.8	10.6

The error rates for each participant's timed writings either decreased over the four weeks or remained the same.

Discussion

The purpose of this pilot study was to investigate the *language-related* and *content-related episodes* found in synchronous computer-mediated discussions among ESL students who were learning to write in an academic setting, with a view to plan my main dissertation data collection. Regarding factors that might be conducive to learners' attentional shifts from LREs to CREs in communicative activities, data analysis showed that topics of discussion, rapport among discussants, and learner factors were the primary reasons that produced the occurrence of LREs and CREs across discussions. These pilot data also helped me specify the nature and characteristics of LREs and CREs at the same time.

During the first discussion, the participants were required to discuss their final research paper topics, ask questions about each other's topics, and request further information as well as clarification. The person who provided information about his or her own research topic explained technical or discipline-specific jargon to his or her group. Given that highly specialized vocabulary words or concepts needed to be explained by each participant, the discussion contained more frequent inquiries on lexical issues and the meanings of words, whereas orthographical errors seemed most often to be self-corrected. A few instances of recasts took place as well.

One other interesting finding was the participants' ability to revisit topics brought up much earlier during a discussion. The topic brought up in line 19 of Group 3 CHAT 1 by one student was later taken up in line 69 by another: The distance between lines 19 and 69 was not a hindrance in terms of topic development. Due to the permanence

afforded by online discussion, the adjacency between lines 19 and 69 could be revisited. Participants were involved in multiple inquiries and took on different roles during discussion. In this conversation, one student self-corrected his orthographic mistake in line 79, with no explicit mention of these spelling mistakes. While other participants continued asking one another about the reasons for choosing his or her research topics, another student was using the word "choose" correctly, but the other student still misspelled words and made corrections. The fact that the topic initiated in line 19 by Sookhee was taken up by Franco in line 69 showed that the online discussion environment extended ESL participants' linguistic, cognitive, and memory spans under the pressures of real-time, fast-paced exchanges while interacting with multiple conversation partners.

From this pilot study, I learned that how I grouped students influenced the development of a discussion very much. Because students in this pilot study were not very familiar with online discussion environment and preferred being grouped into smaller discussion groups, each discussion group was composed of two or three participants. As a result, threads in the discussion were relatively shorter and did not develop as much in-depth as I had expected. For my main study, I decided to group my participants into one group as a whole, unless there were more than 20 participants. I expected the number of participants would be somewhat in proportion to the amount of participation and also the quality of *language-* and *content-related* instances in each thread.

I also realized that the discussion topic affects not only students' participation patterns, but also the types and characteristics of LREs and CREs. In the pilot study, one topic was a discussion of their final research paper and the other topic was given by a TOEFL prompt. In both discussions, each student showed a variety of participation patterns and noticeable changes in his or her interlanguage. When students shared their own research topics, more inquiries focusing on LRE-lexical were initiated to understand highly specialized terminology and jargon, whereas students brought up more content-related issues when discussing a topic regarding the death penalty from an intercultural perspectives. For best learning outcomes, I realized that online discussion topics should be well-implemented and thought-out in line with course goals and curriculum, as well as the day's learning objectives.

I also realized that the analysis of content-related instances should be elaborated more, depending on class objectives and course level. In addition to evidence for their language uses, I also wanted to focus more on discourse level instances in which students showed an ability to use English as a tool for their knowledge gain, co-construction, and collaboration. In my main study, I expected to see other categories of episodes during online discussion that targeted understandings about sub-disciplines of ESL course content, such as listening, speaking, reading, and writing, depending on the course objectives.

The Main Study

Based on what I learned from my pilot study, I conducted the main study using a more elaborate research design.

Participants and Setting

The data for the study came from a rhetoric and composition course (Level 1) for non-native English speaking students enrolled as undergraduates at a private university. This course was not an ESL class, but was part of the regular composition course offerings except that it was restricted to international students specifically.

Initially, this class had 22 students, all of whom were placed in the same level according to a written diagnostic test before the beginning of the semester. In the second week, the department decided to split the class into two sections to be in line with their own guidelines of no more than 15 students in a writing class. Assignment to the two sections was random, except that one pair of students requested at the last minute to be assigned to the same section. One class, taught by me, had 10 students and served as the treatment group, and meeting at the same time, the other section was taught by another instructor with 12 students and served as the control group. Both sections met in computer labs equipped with enough desktop computers for all students (see Figure 2). Due to this convenience and ease of access to computers in the classroom, I was able to implement online discussion at every class meeting.

whiteboard & screen

entrance

teacher desk

student desks

computer desks

computer desks

computer desks
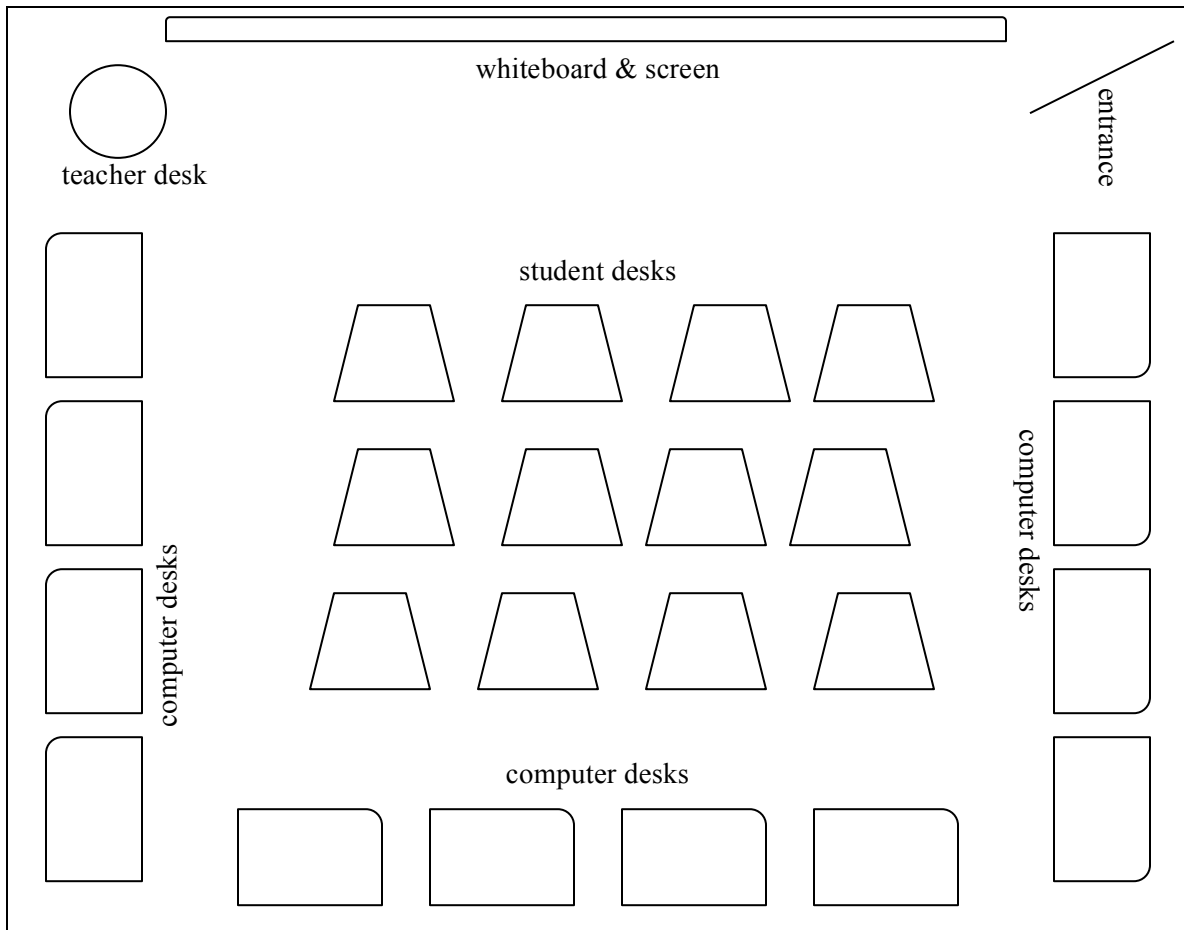
Figure 2. Rhetoric & Composition Classroom

The 22 students in the two sections were five women (two in the treatment

section) and 17 men (eight in the treatment section), originating from Angola, France,

South America, Saudi Arabia, Bahrain, Korea, and Japan; one student was deaf (see

Table 3).

Table 3
Demographic Information of Participants ($N = 22$)

		Saudi Arabia	Japan	Korea	France	Angola	South America
Treatment ($n = 10$)	Male	6	1	0	0	1	0
	Female	0	0	0	1	1	0
Control ($n = 12$)	Male	6	0	0	1	0	2
	Female	0	1	1	1	0	0

The participants had all been in the United States for at least one semester, and some for more than one year. Although the course was restricted to international students, only those who had passed the university's minimum English proficiency requirement, as determined by a TOEFL or IELTS test, were allowed to take this course and have it count as part of their regular coursework. Their majors included Computer Science, Management, Kinesiology, Information Management, and Entrepreneurship (see Table 4). Their ages ranged between 19 to 35 years old.

Table 4
Participants' Field of Study

	Treatment Group	Control Group
Management	2	2
International Business	0	1
Economics BA/BBA	2	1
Communication	0	1
Political Science	0	1
Kinesiology	1	0
Computer Science	2	1
Entrepreneurship	1	0
Global Studies	0	1
Chemistry	1	1
Finance	0	2
Academic Exploration - ND	1	0
Total	10	12

Recruitment Process

After I accepted the offer to teach the composition class as a lecturer, I first contacted the director of rhetoric and composition to explain my research topic and to ask about the possibility of collecting data. The director notified the writing instructors, and several of them who had taught rhetoric and composition courses at the university were

willing to arrange two courses for my research design. After receiving approval from the

director and fulfilling IRB requirements at both my own and the institution where I would

collect data, I was assigned to teach one section of a Rhetoric and Composition I class for

international students. When the enrollment of my class ballooned to 22, the writing

program decided to make two sections. The class that I taught became the treatment

group, and the other section taught by another instructor at the same time became the

control group.

Sharing the same syllabus and course schedule, the control group instructor and I

carefully planned the activities of the course to incorporate timed-writing, as well as

beginning of semester informative essay, and a final controlled research paper. Whereas

I designed the treatment group to have an online discussion component, the control group

carried on class in a more usual face-to-face format. The two groups used the same

textbook, and students in the two classes were required to submit the same assignments

within a similar time frame. At the beginning of the semester, I visited the control group

class, explained my research project to students, and received initial approval from the

instructor and students for data collection and class recording However, due to students'

frequent absences, the instructor of the control group had to ask several times to collect

the consent forms. For the final approval to use individual data, I waited till the end of

the semester for my dissertation chair, Dr. Diane Schallert to go into both classes to

obtain permission. Initially, in the treatment group that had 10 students, 9 students

agreed to participate fully and 1 gave permission to all data but grades. In the control

group that had 12 students, 5 students agreed to participate; among them, 4 agreed to

participate fully and one did not grant permission to grades on timed writings and essays. When the semester had been over by more than five months, I contacted each student who had not agreed or only partially agreed to participate in the study individually by *Skype* call and email again, and this time they agreed to participate in the study. I had their *Skype* IDs saved because all 22 students were in one class and I was the instructor: The control group students granted me access to their two essays, and I used the two essays of 11 students (one student did not submit all the essay assignments). Among the treatment group, one student who only allowed partial access to her class assignments and online discussion gave me full access when I asked a second time.

For the treatment group taught by me, Dr. Diane Schallert visited and explained my research project. Students showed their willingness to participate in the study according to their choice while I was not present, and the consent forms were collected and kept by Dr. Schallert. I did not have access to them until students had received their final grades.

Data Collection and Sources

Data collection took place across one semester in the fall of 2012. For the treatment group, online discussion occurred at the end of every class session for no less than 30 minutes, twice per week, as a regular required component of the class. For one class period mid-semester, the students had a much longer than usual online discussion (75 minutes), on topics presented at the previous session. Tasks and topics of online discussions were chosen to complement the day's lecture and learning objectives (see Table 5). I, as the instructor, did not participate in the discussion. The online discussion

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transcript was saved at the end of each discussion session recording names and time stamps next to each posting. By contrast, students in the control section participated in face-to-face discussion, along with group activities, instead of online discussion. These discussions were teacher-led, as well as student-based, small-group discussions about academic writing, lasting no less than 30 minutes and occurring at every class meeting.

The original plan had been to have timed writings occur once per week in both sections. For the treatment group, I was able to follow the plan, assigning my students to write a timed (20-minute) word-processed response to a prompt on a course-related topic. After 20 minutes, they uploaded their files to the course management system (Blackboard). However, the teacher of the control group chose to engage her students in timed writing only six times. Because of many absences and failures to upload their timed writings, I was able to use only one of these sets of writings, the uploaded files of a day near the middle of the semester.

Because the timed writing proved to be an imperfect point of comparison between the two groups, I selected another common type of writing as a way to compare the groups. Students were required to write first and final drafts of two types of essays, an informative essay near the beginning of the semester and a persuasive essay based on evidence near the end of the semester. Three to four weeks were spent with each essay type. After learning characteristics of each essay type and guidelines, students began working on their draft and submitted it at mid-week or end of the second week. Both instructors provided feedback, myself electronically and the other instructor on printed copies of students' essays. Students submitted their final drafts one week after receiving

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feedback. Both groups' essays were graded according to a rubric (see Table 6). Students in the treatment group submitted their drafts and final essays electronically whereas students in the control group submitted paper copies that the instructor scanned, uploaded, and shared with me using Google drive.

Data sources included (a) two academic essays, one at the beginning and one at the end of the semester, and (b) demographic and perception survey data from both treatment and control groups. From the treatment group specifically, a total of (c) 26 online discussion transcripts, (d) 12 weekly timed writings, (e) interview data, and (f) my field notes from classroom teaching and observations were collected twice per week during every class session for 13 weeks. From the control group specifically, (g) audio recordings were collected to capture class discussions. Two genres of academic essays were included, an informative essay and a final controlled research paper.

Data from the treatment group. I collected several data sources from the treatment group, and the details are described in the following sections.

Online discussion transcripts. For online discussion, participants used the *Skype* group online discussion feature throughout the semester twice per week. Compared to other LMS discussion tools, *Skype* had more diverse features and layout, such as emoticons and group phone calls. During the second week of the semester, each student, including me, shared our *Skype* ID, followed by one student creating a group chat for all other classmates to be added. I chose tasks during online discussions that were relevant to the day's learning objectives, ranging from various topics about academic writing,

collaborative problem solving tasks, and brainstorming and sharing their ideas for writing

their research paper (see Table 5).

Table 5
Initiating Topics for Each of the 26 Online Discussions

Online Discussion	Topics	Total Comments
1	Understanding plagiarism	196
2	Majors and future jobs	240
3	What is thesis statement	287
4	Informative essay topic	161
5	Chronological essay	233
6	Collaborative problem solving	192
7	Three ways to write an introduction	166
8	How to support your body paragraphs	225
9	How to form research questions	216
10	How to find resources for informative essay	177
11	How to paraphrase and summarize	139
12	Cause & effect essay thesis statement	212
13	Analyze one sample essay	131
14	MLA documentation guidelines	293
15	Cause & effect essay	136
16	Explain your country's immigration policies	251
17	*Pros & cons on illegal immigration	541
18	Exchange feedback on your thesis statement	211
19	How to cite information for final paper	178
20	Share major topics from readings	200
21	Discuss vocabulary expressions in readings	172
22	Immigration terms in readings	118
23	Professional goals & ways to prepare	216
24	Education, future careers, & resume	248
25	How to write resume	173
26	How to write cover letter	248

Note. *On this day, students met solely online to discuss the assigned readings for the full 75 minutes of class rather than starting with a face-to-face meeting.

Students were able to see who was writing or erasing their comments from an

icon that showed a pencil and an eraser. Students were able to scroll up and down the

screen to trace back earlier comments in the discussion. I as the instructor of the class

was always logged in but did not participate in the discussion. I could monitor the evolution of each discussion from both my laptop computer screen and a large screen that was installed in front of the class. Following each discussion, I exported the conversation to a *Microsoft* word document from the *Skype* chat screen, and immediately assigned a pseudonym to each participant for further analysis. Discussion records remained permanently on *Skype*, and each day's discussion log was automatically saved in a time order and retrievable.

Weekly timed writings. For the treatment group, participants were required to engage in timed writing once per week. For these, they were given 20 minutes to respond to writing prompts at the end of class, usually on Wednesdays. Topics of writing prompts covered academic issues, and I chose them based on the day's lesson to allow student to practice and apply what had been the topic of the day's discussion. Students used a *Microsoft* Word document to compose a paragraph. Because online discussion was taking place at the end of each class, on the day that students completed timed writing, it immediately followed an online discussion. After finishing online discussion, they opened a *Microsoft* word document and started to write based on the prompt I assigned them that day. Before they left the class, each student uploaded his or her timed writing to a folder on Blackboard, so that I could access it. Prior to uploading their timed writings, participants recorded the total number of words in their composition on the document. I downloaded their timed writings from Blackboard for data analysis.

Treatment student interview data. Toward the end of the semester and after they had provided consent, I scheduled an interview with each of my 10 students to explore

their in-depth experiences in the class. The semi-structured interview included 27 questions with some follow up questions, including structural and contrast, developed from my reading of the literature and my research questions (see Appendix C). The interview questions were intended to investigate various levels of second language processing demands that the online discussion imposed on the participants, as well as their perceptions of affordances including shared lexical, grammatical, and syntactic knowledge among them. I conducted each interview by using *Skype*, with a sharing of my screen during the session so that each interviewee could read the questions. The interview was audio recorded at the same time with an iPhone recorder. I took notes as participants answered each question and could check with them to see if I had captured their ideas correctly. This procedure ensured that each participant understood questions well, and they felt comfortable with their answers and with the accuracy of my portrayal of their ideas. Interview data were triangulated with all other data.

  Field notes and audio recordings. For the treatment group, I audiorecorded each class session with a voice recorder and made notes of class details, including students' interactions, major happenings relevant to the day's learning goals, questions raised during class, main instructional activities of the day and students' responses, and classroom description including seating arrangement. At end of each class, I wrote my notes on my computer, including interaction patterns, as well as an interplay among classroom activities, individual linguistic variables, contextual factors, instructional details, and online discussion component.

Data from both treatment and control groups. I collected the first and the last drafts of the two academic essays and a demographic survey from both groups.

Two academic essays. First and final drafts of two types of essays, an informative essay near the beginning of the semester and a controlled research paper near the end of the semester, were used for data analysis. For the treatment group, three to four weeks were spent with each essay type. I assigned the first draft during the first week of each essay type, and the final drafts were collected at the end of the period. After learning characteristics of each essay type and guidelines, students submitted their essay draft electronically by uploading it on Blackboard. Students spent about 1.5 to 2 weeks to complete the first draft and after receiving my electronic feedback, they submitted their final drafts within one week. I provided feedback electronically by using the track changes feature, adding comments on students' assignments and grading according to a writing rubric (see Table 6). For the control group, the instructor presented the essay assignments in the same order and graded them based on the same writing rubric.

Table 6
Writing Rubric

Thesis & Evidence	Development & Organization	Format	Convention	Sentence Fluency	Vocabulary & Word Choice	Sense of Audience

Table 6 continued.

	Statement of position/thesis cannot be determined.	Writing is under-developed with no transitions or closure.	Displays very haphazard use of formatting rules.	Numerous errors in mechanics and/or distracting inconsistencies in grammar usage.	Very little or no sentence variation with errors that detract from the meaning.	Inaccurate word choice, that obscures meaning. Language is trite, vague, flat, rambling.	Writer's voice/point of view shows little or no sense of audience.
Not Acceptable (1)	Few or no forms evidence. Work does not have any references.	Inadequate organization and lacks logical progression.	Fails to use quotes to acknowledge other's ideas and/or lacks paraphrasing.	Serious errors in punctuation, capitalization, and spelling.	Very little or no use of phrases and clauses. Writing contains numerous fragments.		
Developing (2)	Position/thesis is stated, but not maintained consistently. Limited use of forms of evidence. Work does not have the appropriate or accurate references.	Writing is brief and/or under-developed with weak transitions. Writing displays some unity and progression, though connection is obscured.	Displays inaccurate use of formatting rules. Quoting, paraphrasing, and summarizing needs improvement.	Frequent errors in mechanics and/or grammar usage. Some errors in punctuation, capitalization, and spelling make meaning challenging.	Limited sentence variation. Very limited use of phrases and clauses. Writing contains many fragments.	Inaccurate word choice but the writer's main ideas come through though unclear	Writer's voice/point of view shows that sense of audience is vague.
Satisfactory (3)	Thesis is stated and maintained consistently, but needs more clarity. Some use of forms of evidence. Work has some number of references, but needs more.	Writing is more developed but needs stronger transitions. Displays unity, progression, with some redundancy, digression, or unclear connections.	Displays some adherence to formatting rules. Quoting, paraphrasing, and summarizing are used somewhat correctly	Some errors in mechanics and/or grammar usage. Errors in punctuation, capitalization and spelling. Errors do not interfere with meaning.	Some sentence variation. Some use of phrases and clauses. Some sentences are incomplete and run-on sentences.	Word choice is mostly accurate but does not fully communicate writer's idea.	Writer's voice/point of view shows that sense of audience is developing.

Table 6 continued.

	Position/Thesis	Organization	Formatting	Mechanics	Sentence Structure	Word Choice	Voice
Very Satisfactory (4)	Position/thesis is clearly stated and consistently maintained. Sufficient use of forms of evidence. Work displays appropriate number/use of references.	Writing has a beginning, middle, and end, with transitions and closure. Displays unity, logical progression, with few redundancies, digressions, or unclear connections.	Displays accurate use of formatting rules. Appropriate use of quotations, & paraphrasing.	Few errors in mechanics. Mostly consistent grammar usage. Minimal errors in punctuation, capitalization, and spelling.	Sentences are complete and correct. Sentence structure is varied. Some variation of phrases and clauses used. Nearly all sentences are complete with very few run-on sentences.	Word choice is effective in getting the writer's ideas across.	Writer has a strong voice/point of view. Writes with specific audience in mind.
Excellent (5)	Position/thesis is clearly stated consistently maintained, and sophisticated. Clearly appropriate use of evidence enriches writing. Work displays appropriate and correct number & use of references.	Writing has a strong beginning, middle, and end with clear transitions and closure. Displays unity, well-executed progression of ideas, clear organization, cohesion, and coherence.	Displays strong command over formatting rules. Appropriate use of quotations & paraphrasing that effectively situates discussion.	Almost no errors in mechanics and grammar usage. Minimal errors in punctuation, capitalization, and spelling.	Sentences are complete and correct. Sentence structure is varied. Adequate variation of phrases and clauses used. All sentences are complete and run-on sentences are avoided.	Words are well selected, varied, and clearly communicate the writer's ideas.	Writes with a distinct, unique voice/point of view. Writing is skillfully adapted to the audience.

The instructor of the control group provided feedback by writing comments directly on students' paper. After collecting students' essays, the instructor uploaded and shared them with me by using *Google* document sharing twice during the semester.

Demographic and perception surveys. Participants' demographic information, their linguistic and ethnic background, online discussion experience, and computer use were gathered through a demographic and perceptions survey toward the end of the

semester (see Appendix D). The treatment group's survey consisted of the five domains

of student perceptions: (a) demographic information, (b) language learning, (c)

motivation and affect, (d) technology use, and (e) general questions. The survey asked

yes/no, multiple choice, and open-ended questions, and was delivered using *Qualtrics*

survey software. Questions about demographic information in Part 1 elicited students'

biographical information, language background, English ability and test scores, computer

skills, and their prior experience with online discussion. Part 2 measured the students'

perceptions of their language learning as a result of online discussions, associated with

listening, speaking, reading and writing skill development and developing cultural

awareness. In Part 3, how online discussion affected students' motivation to learn a

target language and culture was measured. Part 4 was intended to capture students'

perceptions about technology issues involved in online discussion, in addition to user-

friendliness of the online discussion interface and layout. Finally, Part 5 of the survey

asked students to rate their previous experience in technology-supported classrooms and

to discuss positive and negative aspects, followed by questions that measured their

perception of online discussion use in the class that semester. To create survey domains

and generate questions, I first reviewed the literature, held focal student interviews with

ESL students during my pilot study, and pilot tested the survey.

For the control group, students filled out Part 1 of the survey (see Appendix D)

only, which asked for their demographic information by using the same online survey

tool, delivered via a survey link I emailed to the instructor and the students. After several

class days had passed, I visited the control group in person briefly to remind them to

complete the survey. I gradually became more acquainted with the instructor and the control group students, and my visits in their class were less obtrusive, as the semester proceeded, not hindering the flow of the instruction.

Data from the control group only. Five class audio recordings and an instructor interview were collected as data from the control group in addition to the student data described earlier.

Audio recordings. The control group instructor collected five audio recordings of the class spread throughout the semester with a voice recorder I provided. After receiving the recordings, I listened to them several times and transcribed them. The class recordings were used to understand control group class discussions and also to create interview questions for both control group participants and the instructor later in the semester.

Control group instructor interview data. I conducted an in-depth *Skype* interview with the control group instructor for about 1.5 hours, regarding classroom discussions, assignments, students' interaction and responses, followed by instructional strategies and her feelings about her students and lessons. Most interview questions were open-ended (see Appendix E). I transcribed the interview data for my future use.

Data Analysis

Both qualitative and quantitative data analysis were necessary to explore how or whether online discussion affected second language writing development.

Qualitative analysis. I conducted detailed qualitative analysis of the online discussion transcripts and student interview data used, and field notes, classroom

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observations and control group teacher instructor interview data to triangulate conclusions drawn from other data sources.

   Online discussion transcripts.   The methods of analysis can best be described as involving both a deductive and an inductive *interpretivist* approach (Corbin & Strauss, 2008) with a focus on naturally-occurring discourse. Erickson's (2004) local and global aspects as well as strategies of discourse analysis by Wood and Kroger (2000) were used to understand topic development in synchronous online discussions. The initial deductive analysis particularly focused on the comments that captured *content-related episodes* (CREs) as well as LREs, which are "instances when learners show evidence of a shift of attention from message meaning to message form regardless of whether this shift emerges due to a problem with message comprehensively… additional shift that takes place incidentally in a meaning-focused, communicative task" (Yilmaz, 2011, p. 117). Additionally, many instances that specifically discussed academic writing topics were found, and I developed another coding category, *writing-related episodes*. The overall patterns of these instances were categorized, in terms of number of occurrences and the contexts of LREs, CREs, and WREs to configure systemic interactions during communicative tasks. Evidence of lexical, grammatical, and orthographical LREs were noted across the semester to observe the evolution of LREs in relation to their types and outcomes. Gee's (2008) notions of *Discourse* and *discourse* were also taken into consideration throughout the analysis.

   All 26 synchronous discussions of the treatment group were analyzed through discourse analysis. Two coding schemes, *language-* and *content-related episodes*,

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derived from the pilot data, were initially applied to each comment and thread posted during discussion sessions. This analysis informed a view of the development of each discussion and its *systemic* and pedagogical values. It also led me to add the coding category of WREs, writing-related episodes, to capture talk associated with the process of writing.

As the first step to understand how comments co-evolved throughout each discussion, I created coherence graphs (Schallert et al., 1996) from the online discussion transcripts to show how each topic was initiated, developed, and connected to other topics, how comments were connected to other comments, while thoroughly reading and analyzing each line of the discussion (see Figure 3). By referring to a discussion's coherence graph, I analyzed each online discussion transcript line by line and coded characteristics of LRE, CRE, and WRE, such as foci, types, outcomes, etc., making notes on the transcripts.

Posting #					
250					Satam
251			Abdullah		
252					Satam
253	Fleurette				
254	Fleurette				
255				Mohammad	
256					Mohammad
257		Fahim			
258	Fleurette				
259					Mohammad
260					Adelgunda
261					Edgar
262	Fleurette				
263			Abdullah		
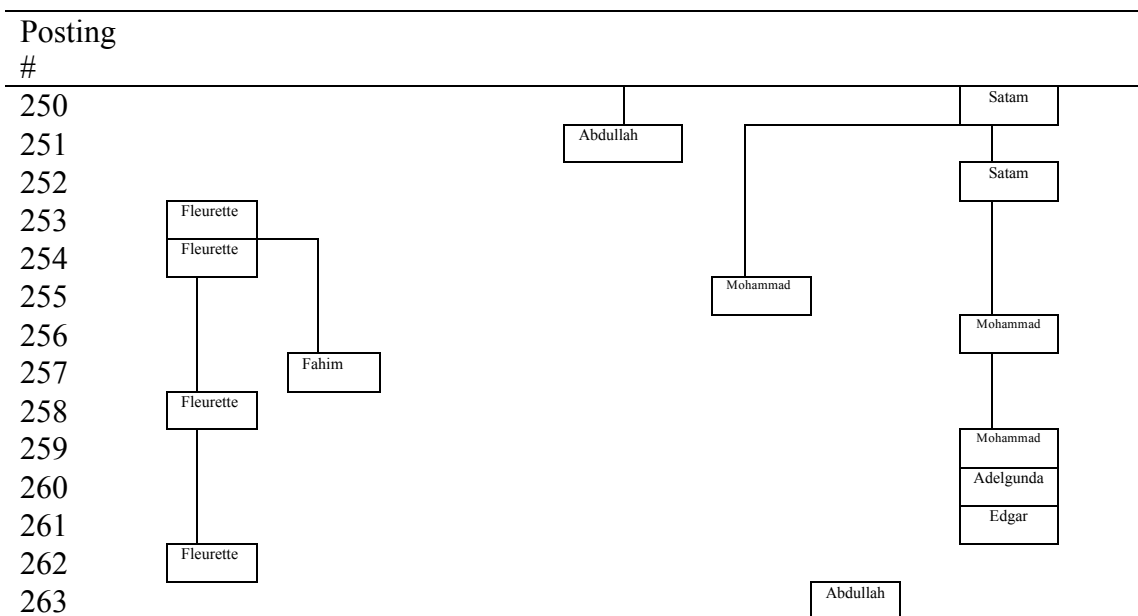
Figure 3 continued next page.
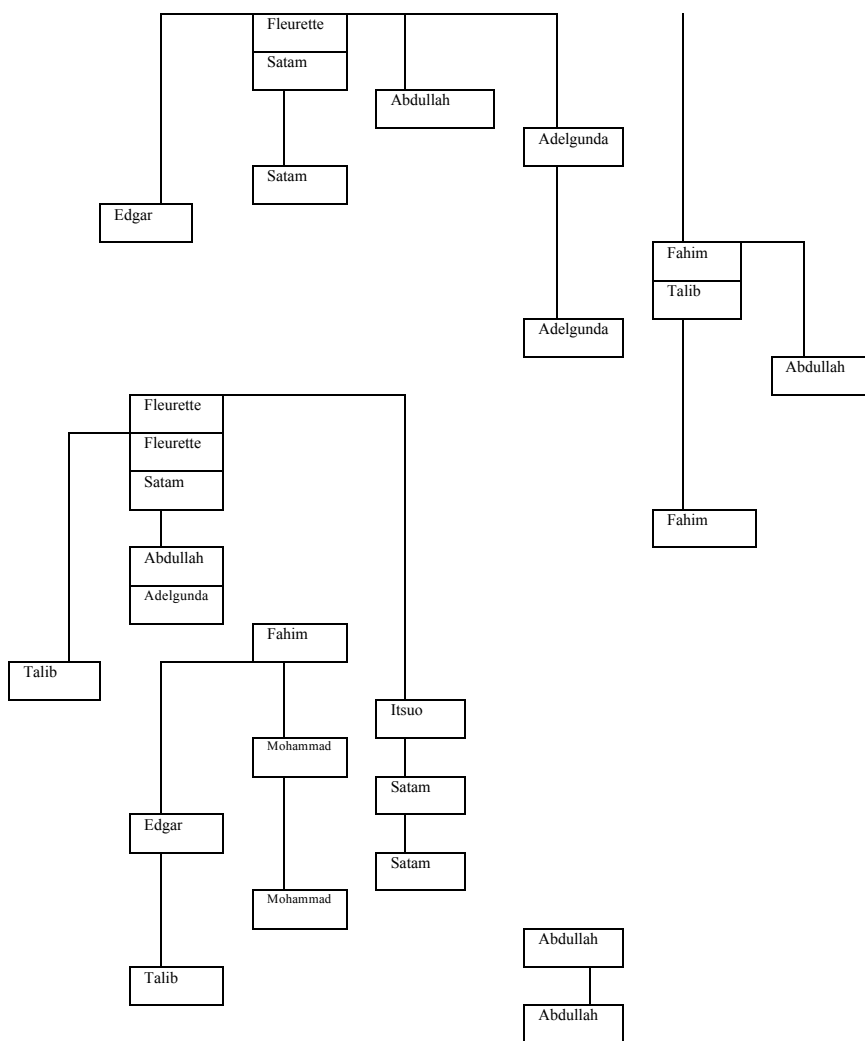
Figure 3. Excerpt of the Coherence Graph for October 31

As the second step, I applied LRE, CRE, and WRE codes to online transcripts and recorded particular instances in which participants made shifts in their attention shifts from general communicative activities to particular linguistic items. I visited online discussion transcripts several times and made a detailed summary of each discussion, including general preponderance, total number, examples and descriptions of LREs, CREs, and WREs, contextual descriptions that explained discussion topics, students'

participations, who initiated topics, and how or whether it was developed throughout the discussion.

Finally, to capture overall recurring patterns or emerging themes from the online discussion data, each was first reviewed in detail, triangulated with audio recording, field notes and class observations, and revisited for more in-depth analysis. To establish interrater reliability, I asked a fellow colleague, an ESL instructor and specialist in linguistics, to code 20% of the transcripts by using the same categories. Interrater agreement was 98%.

Student interviews. As I mentioned earlier, all ten students from the treatment group volunteered for an individual interview. I used a 27-question protocol to ask about their prior knowledge and experience of the online discussion. Interview questions (see Appendix C) covered their views of the connection between L2 reading and L2 writing, online discussion and L2 writing, and the differences between individual and collaborative writing in L2.

The methods of analysis can best be described as a grounded theory approach with a view to building a theory from emerging themes and framing data according to *paradigm* and *process*. The analysis particularly focused on the answers that displayed various reactions that each participant revealed throughout the semester regarding online discussion as a new learning environment, as well as perceived usefulness of timed writing. After I had visited interview data several times, several topics related to students' experience in online discussion emerged. As I let the data speak for themselves, I constantly created a list of topics, cleaned up the previous topics and subtopics emerging

from each student's interview data, and established multiple themes. I also looked for

evidence and examples for each topic and theme and saved these in a separate *Microsoft*

word document, making an effort to understand each student's answers more in depth.

This iterative step was repeated more than a dozen times over two months. After

organizing themes that were built into a theory, I described the overall phenomenon or

preponderance of patterns among participants' answers according to *paradigm -*

conditions, emotion/reaction, and consequence - as well as *process* (Corbin & Strauss,

2008). To visualize the phenomenon in this paradigm model, I drew a diagram, while

constantly revisiting the data, to create the one that best represented students' experience

in online discussion (see Figure 4).

Context ------------------------------→Action/Interaction/Emotion -----------------------→ Consequence

Context ------------------------------→Action/Interaction/Emotion ----------------------→ Consequence
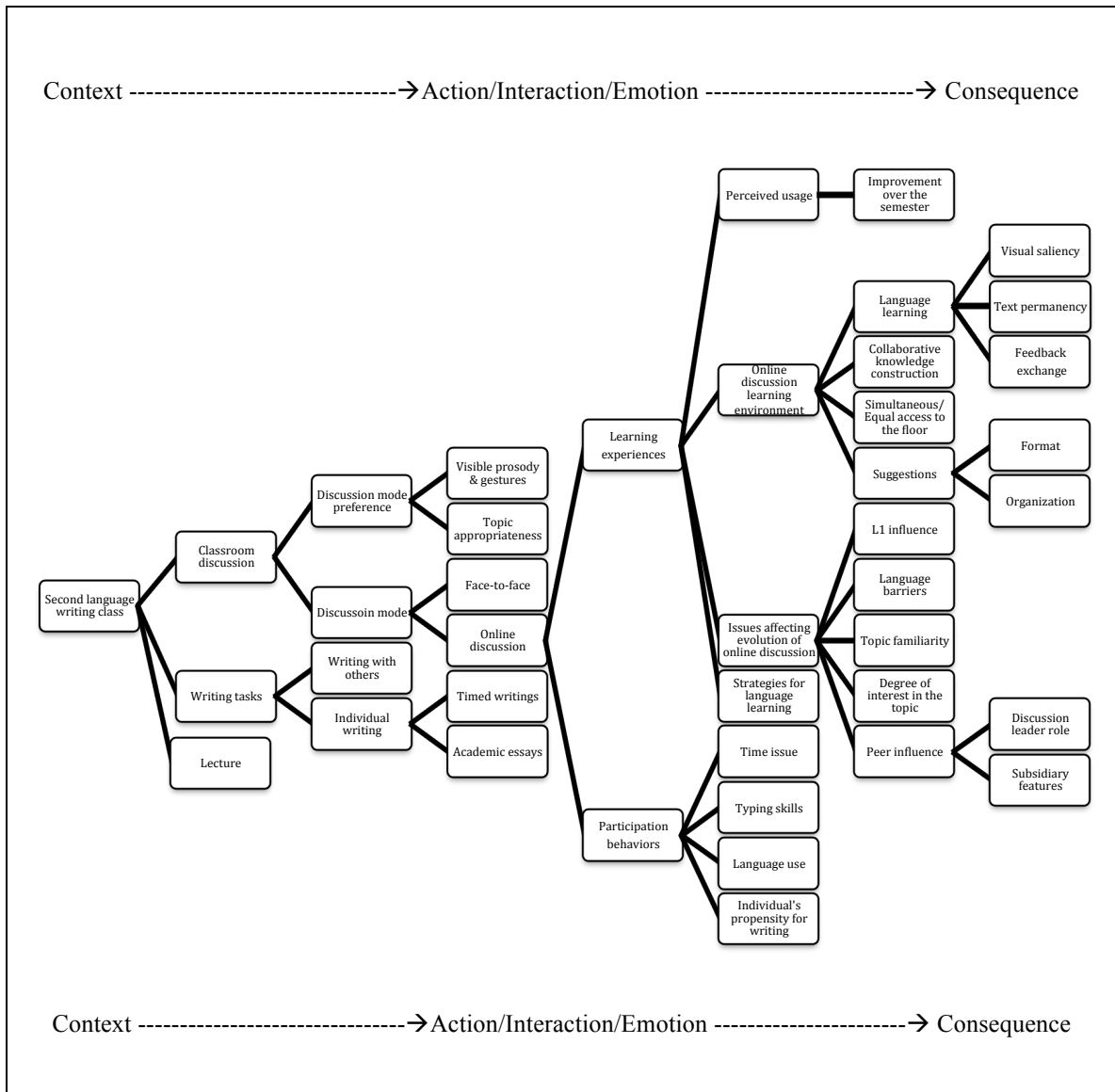
Figure 4. Topics Emerged from Treatment Students' Experiences in Online Discussion
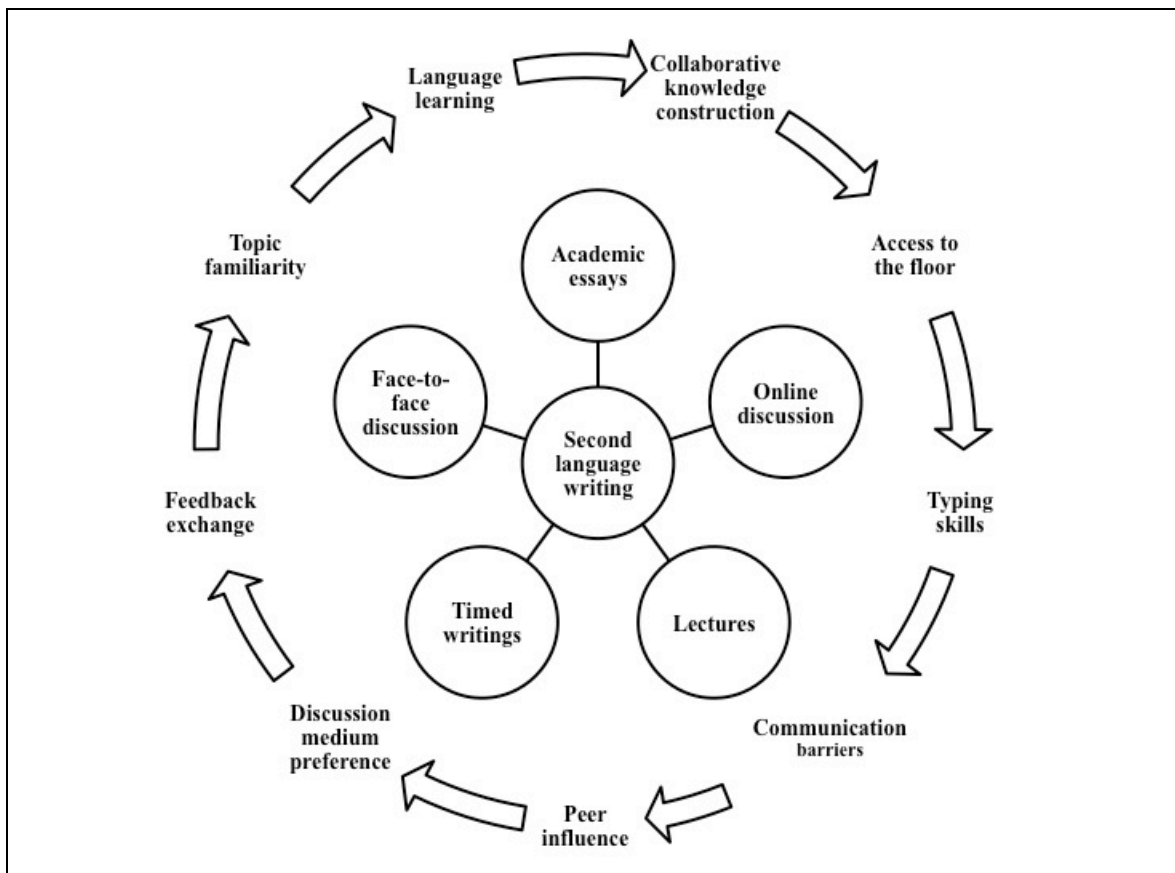
Figure 5. Students' Experiences in Second Language Academic Writing Class

Class observations. For the treatment group, detailed descriptions of each class observation were recorded in field notes. I conducted inductive data analysis on these notes to capture naturally emerging themes from these data. For the control group, because students met at the same time as the treatment group, I used class audio recordings to capture class sessions. The instructor of the control group agreed to record each class session, and I provided a voice recorder. However, due to an unexpected loss of the voice recorder in the middle of the semester, I obtained only five audio recordings from the control group and these represented early and late class meetings, with each recording at least 2.5 hour-long. These data gave me a good picture of the control

participants' face-to-face classroom discussions, including their participation patterns, turn-taking, and various roles taken by each participant in the discussions over the semester.

Quantitative analysis. Students' timed writings, essays, and demographic survey data were analyzed with both inferential and descriptive statistic analyses.

Timed writings. To evaluate the timed writings, I tabulated the mean number of words for the timed writings for the treatment group only. Then, each timed writing was blinded and randomly mixed for my rating. I rated each writing piece based on the writing rubric I created (see Table 6). Developed based on existing writing rubrics in the literature, the rubric contained seven criteria with 5-point Likert scales, ranging from 1 (Not acceptable) to 5 (Excellent). Half points were also assigned. Using an SPSS program, I conducted statistical analysis of these coded measures to see if there were differences across time. To account for the occasional absence among the students, I divided the semester into three time periods of four weeks each. These individual student means across each time period for each of seven criteria were submitted to MANOVAs with follow-up ANOVAs where appropriate.

From the control group students who participated in five timed writings over the semester, I chose the one set of timed writing that took place on October 10 to compare them with those of the treatment students on the same date. By choosing and analyzing timed writings of the two groups on the same date in the middle of the semester, I was able to account for whether I could consider online discussion as one of the most influential factors to the treatment section's improvement in timed writings over the

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semester or not, because this procedure showed that the control section was also conducting timed writings, along with other class activities. Using an SPSS program, I conducted statistical analysis of these coded measures on the timed writings using MANOVAs, followed by ANOVAs where appropriate.

Two essays. I collected the final draft of the first essay at the beginning of the semester and the first draft of their controlled research paper at the end of the semester from both treatment and control participants. The two essays were an informative essay assigned in the second week of the semester and an evidence-based persuasive essay assigned near the end of the semester. To allow for the strictest test of the treatment effect, I first compared the final draft of the first essay, what could be seen as the student's best work so far before they had received much instruction but with teacher feedback helping them to write a better final draft, and the first draft of the second essay, work that could be taken to represent each student's own work before responding to teacher feedback. I then compared the final draft of both essays and repeated the same analysis to see how much improvement students made after receiving teacher's feedback.

After blinding names and submission dates, I graded the essays in the same manner using the same rubric as the timed writing. Essays from 10 students in the treatment group and 11 from the control group were used for this analysis. I used SPSS to conduct MANOVAs, followed by ANOVAs where appropriate.

To establish interrater reliability, 20% of both timed writings and essays were randomly selected and coded by a second person, this time a former writing teacher. Pearson correlations of the mean score across the seven rubric categories showed a strong

correlation between the two graders, for timed writings, $r = .86$, $p < .01$, and for essays, $r = .78$, $p < .01$. Additionally, because of the small sample size, I calculated the percentage agreement, determining how often each coder's rating matched exactly or fell within one point on the scale for each rubric category. For the timed writings, the two coders matched on all rubric categories except for the category of thesis statement, for which the coders differed by more than 1.5 points on half of the timed writings. By contrast, for the essays, the two coders matched (or were within one point) on all essays except one, for which only the organization score for that one participant showed a 1.5-point difference. Thus, the coding displayed acceptable levels of reliability.

Demographic and perception surveys. I used descriptive statistics to analyze multiple choice and Likert-scale questions on the demographic/perception survey (see Appendix D). After collecting initial report of the survey, I analyzed students' survey answers by parts. Both multiple choice and short answers were analyzed according to nationality, language background, motivation to learning English, and technology use. For the treatment group, students' perceptions of the use of online discussion was triangulated with their interview data and their actual participation in the online discussions.

Data Trustworthiness

When it comes to scholarly criteria for discourse analytic work, one needs to have a different approach to evaluate or warrant its value. According to Wood and Kroger (2000), warranting means to provide justification and grounds for one's work. In all scientific endeavor, warranting one's scholarly work is the basis and can be achieved

by establishing reliability and validity of the study. Unlike other traditional scientific research, discourse analysis requires different kinds of approach when it comes to how knowledge is defined, the way it is warranted, and how one's claim or work is warranted. In discourse analysis, knowledge or truth is assumed to be discursive, contextual, relative, and always provisional, and thus, a stance of epistemological relativism is the norm (Wood & Kroger, 2000).

As the first condition, reliability in discourse analysis is approached differently than for a traditional study. In conventional research, reliability means repeatability of measures, parts of measures, methods, and way to conduct research across samples or participants. However, in discourse analytic work, the relation between operational replication and conceptual replication is arbitrary and provisional. To establish interrater reliability in my data analysis, I always recruited a second coder to analyze some (20%) of qualitative data categories, including online discussion transcripts, timed writings, and essays to compare with my initial coding. I focused on finding the right coder with a similar background and on training the person to check whether coding was being done in the same way and making adjustment otherwise.

Repeatability and replicability in discourse analytic work should not be applied in a conventional and traditional sense. What is more crucial is repeated readings of data, reanalyzing of data, reassuring the findings and interpretation, and repeated reconsideration of categories and themes established through memo or other data coding activities (Corbin & Strauss, 2007).

Another important criteria is to establish validity in discourse analytic work. In conventional scientific research, researchers establish a claim of what closely reflects the reality of a situation (Denzin & Lincoln, 1994; Guba & Lincoln, 1994; Wood & Kroger, 2000). However, in discourse analytic work, truth and reality are always provisional, changing, and contextual. In discourse analytic work, what is more crucial is what kind of reality we are creating, and what kind of person or phenomenon we are portraying as a way to frame social problems and issues, with a view to suggest solutions to the issues at hand. It is the discourse analyst's major task to create and portray social problems or phenomena as well as possible in order to meet the scholarly criteria (Guba & Lincoln, 1994).

Warrantability of discourse analytic work as scholarly work can be also established through trustworthiness and soundness. Trustworthiness and soundness of scholarly work tell us that one's claim or research is reliable, valid, scientific, able to withstand any obstacles with solid evidence and supporting ideas, and is solidly rooted in existing constructs or theory. These claims not only provide ideal ways to view social problems or the phenomenon at hand but also suggest possible venues and medium to look at social issues in the future. In my dissertation research, I incorporated multiple data sources, such as online discussion transcripts, timed writings, essays, demographic survey, field notes, and audio recordings, for triangulation, as this process "search[es] for convergence among multiple and different sources of information to form themes or categories" (Creswell & Miller, 2000, p. 126). In the process, I always looked for any

disconfirming evidence (Miles & Huberman, 1994) and noted any examples that did not justify my interpretation and themes emerging from data analysis.

To strengthen trustworthiness of discourse analytic work, one needs to establish orderliness and clarity of the entire process of research: How the initial phenomenon became the issue of interest, how a researcher went about and collected data, how data were properly elicited and analyzed, and how this process was clearly and accurately documented in an orderly manner. One of the particular characteristics of discourse analytic work is knowledge co-construction. Any discourse analytic work should have a way for readers themselves to evaluate the entire process of research in a clear manner. Researchers should also be able to provide proper evidence for their justification of claims by showing real data or analytic work that was processed through the duration of research period. To give readers more room to participate in knowledge co-construction, readers are invited to review critically and create knowledge or reality with other researchers and their analytic work. In this way, any discourse analytic work can bear fruitfulness (Potter & Wethereall, 1987).

Bringing in internal and external audit trails (Tracy, 1995; Wood & Kroger, 2000) also strengthens the trustworthiness of one's claims in discourse analytic work. To establish soundness of one's claims in discourse analytic work, researchers should pay attention to pattern and coherence of data interpretation as well as the way these patterns are documented (Wood & Kroger, 2000). When a researcher looks at discourse data, he or she should pay attention to particular lexical uses in the discourse, the way participants oriented to their discourse, and how they are revealing the social phenomenon of research

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interest. The documentation and organization of data analysis should reflect and establish consistent patterns to show ways it is abstracted, examined, analyzed, and described. Discourse analysts' description of findings and framing of certain social issues have to be coherently displayed and arranged in a way that the readers can see the overarching patterns and coherence of the claim that discourse analysts are making.

While organizing my data, I used a summary note for each day's online discussion to describe major discussion topics and/or tasks, topic initiators and their comments, and all episodes that were language-, content, and writing-related. I also documented separately students' particular language uses, interlanguage patterns, and discourse markers, and moves that reoccurred frequently and were mirrored among participants, followed by a concluding summary of the day's discussion. Then, I created a semester-long chart that had examples of these episodes. I repeated the same documentation process over the semester and divided the semester into three time periods, corresponding with the time frame when each type of academic essays and timed writings were assigned.

As for the interview data, because I used a screen-sharing feature of *Skype* for each interview and transcribed students' answers at the same time, I was able to conduct member checking simultaneously. For the interview data analysis, I used a modified grounded theory approach and derived content themes based on students' personal and more in-depth responses reported during the interview, including their perceptions and experiences of using online discussion while communicating and exchanging ideas with other classmates by typing in English. This process of finding reoccurring patterns and

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framing these phenomena sequentially according to content themes not only confirmed previous findings about grammatical and lexical uses of language for learners but also granted me insights on pedagogical and theoretical implications.

Plausibility is also an important criterion. One's analytic work should be contributing to the existing literature, providing a basis for solutions to both current and future social problems. In addition, to meet moral criteria is also crucial in discourse analytic work. Social problems, issues, and phenomena have to be rightly addressed, and they have to be approached with the right kind of abstraction. The solutions to social problems or issues should contribute not only to the current problems at hand but also to issues that may arise in the future by providing possible directions or suggestions.

This project was the first, in my knowledge, to look at the effects of regularly holding computer-mediated discussion in a class on second language students' subsequent ability to write in an academic setting. Thus, this project stood to make a substantial contribution to the field of second language writing and computer-assisted language learning. For this project, I designed a way to track and connect students' contributions in weekly online in-class discussions to their subsequent timed writings and academic essays. In addition, I was able to have a control group with which I could compare the effects of the daily written discussions in subsequent essay writing. The results showed that the effects of the online chat sessions could be traced not only in students' immediate post-discussion writing, but also showed an effect relative to a control group that did not engage in such online discussion. Through this study, I was able to report some limitations of the previous CMD and second language writing

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research and make a contribution to the field of technology and language education, computer-mediated discussion, second language writing research, and second language acquisition, and to provide possible suggestions and implications for future theory, pedagogy, and research. In this way, my study fulfilled the plausibility criterion.

Research Positionality

I maintained several positions from which I was shifting and revisiting throughout the course of the research: as a researcher, instructor, colleague, and facilitator. In doing so, my primary goal broadly was to bring research and practice together, and also, to situate research on second language academic writing, more solidly within CMD research, in particular. Second, but not less importantly, I approached the research site as an instructor because I was the teacher who was assigned to teach the treatment section. Additionally, when I explained my study to the control section teacher and students, I introduced myself as an instructor and graduate student researcher.

To reduce any researcher biases and the potential risk of my teaching and interacting with my students being overshadowed by my research agenda, and also of approaching online discussion, timed writings, and essays that showed students' progress not as class activities but as data protocols, I had to monitor myself as thoroughly as possible by self-checking periodically and also having debriefing meetings regularly with my advisor throughout the data analysis process. This process assured a more valid and scientific interpretation of my data.

Although preventing some potential risks from emerging, my primary goal was that of a researcher to conduct a successful intervention study: not only to facilitate

students' increased understanding and uses of academic writing in English, but also to explore the influence of computer-mediated discussion on students' academic writing and their collaboration experiences and knowledge co-construction with their peers. I also wanted to investigate how this technology-enriched class discussion activity might change the course dynamics and also influence students' learning throughout the semester. For this reason, I positioned myself as a researcher who investigated the effect of implementing the computer-mediated discussion in a second language academic writing class.

My role was also that of a facilitator who ensured the implementation of online discussion technically. While implementing online discussion, I had to teach my students to be familiar with the discussion software, including downloading the *Skype* program, creating a profile and a group meeting, making friends with one another, etc. all at the same time. In doing so, my role included troubleshooting any technological difficulty that students might face while getting familiar with the discussion environment. Because the majority of the students' previous experience with *Skype* was to be socially connected with their friends and family through group calls, face chat, etc., I had to make them aware of the use of *Skype* as an online discussion tool used for a class activity. This step was very necessary to stabilize students' use of the online discussion feature throughout the semester.

When the online discussion became regular, I continued reminding them of the purpose of online discussion as a classroom activity, along with its utility value and benefits. I attempted to influence students by intrinsically motivating them to make the

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discussion as useful as possible for their learning, especially when some students from the same language background made jokes or used their first language, thus making other students feel excluded during the discussion. After each online discussion, I shared with students what I found interesting in their participation patterns. I also highlighted the role of a discussion leader, which fostered students' autonomy and self-managed learning. However, when the discussion was not evolving as productively, I found myself trying to manage their participation so that they could produce more substantial output. During those moments, I had to place an equal importance to my position as a researcher and also an instructor to ensure both the quality of students' learning experience and of data as a valid resource.

This study was initially derived and carried out for my dissertation study, and while teaching and implementing the study, I wanted to bring my students to a conceptual understanding of academic writing and also to the actual application of what they had learned in class during online discussion ultimately. Because I did not participate in the online discussions myself, my role was as an autonomy supporter and motivator to bring research and practice together while collecting my dissertation data. My role that I enacted discursively at different stages throughout the semester as a researcher, instructor, colleague, and facilitator, as well as autonomy supporter and motivator, contributed to all the facets of this research, including instructional implementation of online discussion and timed writings, data collection and analysis, documenting the findings, and projecting the trajectory of my future research.

CHAPTER FOUR

RESULT

The purpose of this study was to describe the role of online discussion in students' experience in a second language writing class. A semester long intervention of online discussion was implemented in a treatment class that had 10 students, and another class with 12 students served as a control group and was taught without an online discussion component. My goal was to provide an in-depth analysis and description of the treatment students' experience and their perceptions of online discussion as part of classroom activities, as it gradually became part of their technology-enriched learning experience, influencing their class participation, their interaction with other peers, and their motivation to learn. I also wanted to compare the improvement in writing that these ESL students in these two classes had experienced, as well as their conceptual understanding and practical application of rhetoric and composition principles developed over the semester, as evidenced in their timed writings and essays.

The following research questions guided this study:

1. What are different types and characteristics of comments that students make in online discussions?

2. What is the nature of the experience of students who participated in online discussions and of their timed writings over the semester, and how do students describe their learning experiences from these class activities?

3. How do the timed writing scores of students who are in a hybrid instruction section with frequent online discussion change over the semester?

4. How does the writing of students enrolled in a class that incorporates frequent online discussions compare to the writing of students in a control section?

I report my results organized by each of these research questions.

Research Question 1

The first research question, asking about the different types and characteristics of comments that students made in online discussion, led to a detailed qualitative look at the online discussions, with a focus on the kinds of episodes that students incorporated in their online comments. I found that comments produced by students could be categorized according to *language-related episodes* (LREs) with their orthographical, grammar and lexical foci, *content-related episodes* (CREs), and *writing-related episodes* (WREs). These episodes evolved in the students' online dialogue across the semester.

Language-related Episodes (LREs)

The following section will discuss LREs categorized in three foci, orthographical, grammar, and lexical. Throughout, I will emphasize development across the semester by identifying the first third of the semester (about nine discussions), the middle third (the next nine discussions), and the final third of the class (the last nine or so discussions).

Orthographical focus. There were several occasions of participant comments that I coded as focused on orthographical issues. As defined by Swain and Lapkin (1998)

and Yilmaz (2011), such episodes refer to instances when learners questioned how another had spelled words or self-corrected their own words.

Initial moves of overt self/peer corrections at the beginning of the semester.

Students in this study started noticing spelling errors or mistakes from the beginning of the semester. During the first online discussion, students initiated discourse moves that corrected misspellings, either of their own or peers, with at least half of the spelling issues going unnoticed or unresolved. While discussing academic writing, students asked questions and answered each other about polices of one another's countries toward plagiarism. For the first time among all other students, Mohammad (pseudonyms) noticed and self corrected his spelling mistakes. When he corrected his spelling, he added an asterisk at the end of the word.

> #72 Mohammad: u can get **icked** out of university
> #74 Mohammad: **kicked***
>
> #158 Talib: **perfict**
> #159 Husam: I do apologize for that
> #160 Adelgunda: Talib " **perfect**"
> #161 Satam: it is a serious offence in my old university
> #162 Talib: thanks

As shown above, Adelgunda noticed and corrected a peer's misspelling, and Talib made the most spelling errors among students. Adelgunda addressed the name of the person who made the spelling errors and provided the right spelling. In online discussion 7, Adelgunda used more than one turn of corrective feedback about a misspelling made by Abdullah, until he finally spelled the word correctly. Adelgunda's corrective moves persisted till the end of the discussion.

71 Abdullah: yes that's **grade** idea
73 Adelgunda: **great*****
75 Abdullah: **grate**
79 Adelgunda: **great******
81 Abdullah: **great** yes yes thank you

#133 Adelgunda: yeah the **conlusion** is the summary of all the arguments you
  use in each body p.
#134 Adelgunda: **conclusion****

During this beginning part of the semester, it became more obvious that

Mohammad and Adelgunda took the initiative to self or peer correct, and among others,

Talib was the student who made the most spelling mistakes and received the most

attention from Adelgunda. Although a fair number of orthographical foci comments was

initiated and noticed during these early online discussions, students were making a

significant number of spelling mistakes and errors that either went unnoticed or remained

unresolved, indicating that students did not pay much attention to misspellings or that

they were not visible to them.

  More recasts and explicit corrections in the middle of the semester. As the

weeks proceeded toward the middle of the semester, students seemed to make corrective

moves more comfortably than at the beginning of the semester. The orthographic foci

that seemed to decrease around the 4th through 6th weeks of online discussion gradually

became more numerous. From the middle of the semester on, students made recasts

noticeably more frequently, while continuing either self or peer correction of errors.

Without pointing out misspellings or who had made them, students used the correct

spelling of the words that their peers had not used correctly. However, the orthographical

foci made during online discussion gradually and noticeably decreased.

In terms of recast, there were two instances of recast during the beginning of semester, and they were made by Husam, Itsuo, and Satam only in online discussion 2. The first recast was made with only one turn, as was the case of the recast in the online discussion 7.

Online discussion 2
#178 Itsuo: yes do you think you is the **gratest** entrepreneur in the world??
#185 Satam: I think the **greatest** entrepreneur is Donald trump

Compared to these cases of recast at the beginning of the semester, more participants, including those who had remained somewhat quiet during the online discussion, became part of a thread that had recasts during the middle and toward the end of the semester. From the middle of the semester on, these recasts were constructed by more turns and included more students. Interestingly, Satam showed more consistent recast moves than other students. During online discussion 14, when Itsuo misspelled the word "trandition," Satam recast by correctly spelling the word "transition." The recast dialogue was made by these two students, Itsuo and Satam, in discussion 2, and they both seemed to continue choosing to provide covertly the correct spellings of words that peers had spelled incorrectly.

#156 Itsuo: how about **trandition** signals!?!?
#158 Satam: oh yeah **transition** signals

Later in the semester, Satam continued to provide recast moves, more than any other student, so that without pointing out explicitly others' errors and mistakes, he provided accurate recasts.

Online discussion 21
#158 Husam: because of **elergies**

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#159 Husam: everybody's sick
#160 Satam: **allergies**?
#161 Fahim: yah

Participation from more students and multiple foci toward the end of the

semester. Although Adelgunda and Mohammad were the two students who showed the

most active participation in self and peer correction, other students, including those who

were less frequent contributors, gradually showed more active contribution to the online

discussion. Furthermore, each thread tended to be formed by more than two students

who joined in to initiate, discuss, and resolve any topic of interest.

One issue that emerged from the online discussions that took place during the

later part of the semester is that multiple foci were introduced by several students.

Students were constructing relatively longer threads than they had at the beginning of the

semester. In these threads, more than one focus were actively built up one on another,

such as LRE grammar focus, LRE vocabulary focus, and *content-related episodes*, to

discuss in later sections. In online discussion 17 as exemplified below, Abdullah,

Adelgunda, and Fahim were discussing various countries' immigration policies.

Online discussion 17
#492 Abdullah: ok in all countries have the same **rull** about the illegal
         immigration right
#494 Adelgunda: **rule****
#495 Fahim: i don't think is all countries have same **rull**
#496 Abdullah: **rule** yes

In addition, students made connections to a spelling issue of a word and its

meaning very naturally in the same thread. During online discussion 22, Satam,

Adelgunda, and Mohammad created a thread in which Satam asked about a word whose

spelling he did not know well. Adelgunda stepped in and pointed out that Satam had

misspelled the word, and Mohammad provided the correct word along with its correct

spelling and meaning. Right after that, Satam asked the meaning of the word "Statutaury"

and Adelgunda recast the spelling and defined its part of speech. After resolving the

spelling issue, students naturally made the transition to talking about the meaning of the

word "statutory."

> Online discussion 22
> #65 Satam: there was a hard word last class but i forgot what it was , was it
>   visicous?
> #66 Satam: or something like that
> #67 Adelgunda: he didnt spelled well
> #68 Mohammad: vociferous
> #69 Satam: im going through the article now
> #70 Mohammad: it means to make a loud noise
> #71 Satam: yes that was it!
> #75 Satam: do you guys know what Statutaury means?
> #87 Adelgunda: statutory is an adj.
> #88 1. Of or relating to a statute.
> #89 2. Enacted, regulated, or authorized by statute.
> #90 statu·tori·ly adv.

As shown in his comments, Satam continued using discourse moves that brought

up vocabulary words himself, how they were used in the articles they were reading, and

also provided their meanings at the same time. Other students jointly participated in the

same thread, contributing to more complete definitions of words with more

comprehensive lexical information. When students were tackling orthographical issues,

they initially tended to focus solely on the accuracy of the spelling, but later were able to

extend their focus to other linguistic areas, such as lexical meaning or grammaticality.

Lexical focus. In terms of lexical focus, I applied this code whenever a student asked about the meaning of a word or phrase.

Providing in-depth definitions from the beginning of the semester. Five instances of LRE lexical focus were found during the early online discussions, and students paid attention to lexical issues in their conversations while being engaged in in-depth vocabulary knowledge exchanges and providing knowledge based on their prior knowledge of vocabulary items.

During the second online discussion appearing below, Abdullah asked Fleurette the meaning of the word *kinesiology*. Whereas Abdullah rarely brought up any orthographical issues throughout the semester, in this case he actively participated in discussing lexical items. In addition, Mohammad was as active in making lexical inquiries as he was for self and peer corrections, although Adelgunda was much less active in lexical inquiries.

> Online discussion 2
> #71 Abdullah: 'ok what is your major
> #72 Abdullah: ?
> #73 Fleurette: kinesiology
> #74 Mohammad: wat is that?
> #76: whats kinesiology?
> #79 Fleurette: it's about sport
> #95 Mohammad: wat is entrprenuership exactly?
> #99 Satam: enrepreneurship is to be creative and how to start you own business

However, at the beginning of the semester, many vocabulary-related inquiries were left unresolved because no one was able to provide correct answers. Moreover, I noticed that students were not grasping the meaning of the technical vocabulary explained by their peer at first, and they would ask the same question again in the next

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discussion. As shown below, Itsuo asked the meaning of a technical term toward the end

of the discussion, even after Abdullah had explained the meaning of MSG. Itsuo asked

the same question once again in the next discussion (Online discussion 10) one week later.

> Online discussion 9
> #196 Itsuo: Abdullah:
> #197 <<< monosodium glutamatesorry what is meaning???
>
> Online discussion 10
> #98   Itsuo: so rry what is MSG??
> #109 Abdullah: msg add to food one of the primary and most consistent effects
>   of MSG
> #134 Abdullah: MSG is a flavor enhancer commonly used in foods we eat every
>   day
> #155 Abdullah: MSg has used for close to one hunderd years to enhance the
>   flavor of foods
> #157 Abdullah: the FDA
> #174 Abdullah: FOod and drug administration classified MSG as a food
>   ingredient and has deemed it

Abdullah who rarely participated in orthographical-focused exchanges gave a

very thorough explanation of "MSG." Four instances were found during the beginning of

the semester and they either went unnoticed or left unresolved. Except for Mohammad,

those who were very active in orthographical instances and provided self and peer

feedback, did not make any lexical moves or very few.

Gradual increase in lexical knowledge construction in mid-semester. While

discussing various topics for their cause and effect essay during their 13th online

discussion, students started asking more questions about the meaning of certain words. In

this conversation, Mohammad gradually took the role of knowledge provider by

answering several word-meaning questions while the students were discussing how a

sample essay was organized. Mohammad, Fleurette, Adelgunda, and Abdullah answered

these questions by identifying the main topic and supporting details of each paragraph.

While the discussion flowed, Mohammad started talking about the word "causal," in

order to emphasize the relationship between cause and effect and to complement other

classmates' postings.

> #77 Mohammad: causal means what is acting as a cause
> #81 Mohammad: which means that the main points of each paragraph are causals
> #83 Satam: the cause for bad bahavior is probably the distractions and no one
> monitoring the student which means basically no parents or supervision

During face-to-face classroom lecture that day, students had read a summary that

explained the theoretical concept and details of cause and effect essays with me, and I

had highlighted the word *causal* as the adjective form of the word *cause*. The word

causal was not familiar to most students.

In this conversation, students also discussed the depth of vocabulary knowledge.

For example, Husam asked a seemingly rudimentary question, but addressing its

contextual meaning, for the meaning of the word *school,* when he was checking to see if

other classmates knew other meanings of the word.

> Online discussion 15
> #83 Satam: paragraph 6 i belive is the bilogical subtopic for question 6
> #87 Itsuo: sorry what is the meanig of subtopic?
> #90 Satam: suptopic is not the whole topic its just a part of it

In discussion 15, when Itsuo asked for the meaning of "subtopic," no further

action was taken on the word "biological" by any other students, either through recast or

a direct provision of its definition, suggesting that students did not discuss more than one

instance of the category at the same time in the same thread, which was different from

orthographical focus conversation.

Active lexical knowledge co-constructions toward the end of the semester.

During the last month of the semester, students tackled lexical issues much more richly

than before. Up until the middle of the semester, only nine lexical episodes were found.

However, from the week they started working on their final research paper, which

required them to read three articles on illegal immigration, the amount of inquiries about

technical vocabulary, legal terminology, and their meanings soared.

> Online discussion 17
> #170 Fleurette: so if the alliens are in fact illegal immigrants they can have
> penalties too
> #171 Satam: such as what deportation?
> #176 Edgar: Deportation is the expulsion of a person or group of people from a
> place or country

As shown in this example, five students, including Edgar who was not usually an

active participant, joined the question- and-answer thread on lexical items.

Expanded to phrasal expressions toward the end of the semester. As the

semester's end approached, students expanded their lexical issues from single words to

longer phrasal expressions. Another common area of grammar error was students' use of

prepositions when these occurred as part of phrasal or idiomatic expressions.

During online discussion 24, students used the expression "make an appointment"

while discussing the topic of how to write a resume and a cover letter. Husam shared his

experience of visiting a career service center on campus. While explaining how to "make

an appointment" to visit the service center, students used a variety of verbs to start this

expression, as shown below.

> Online discussion 24
> #38 Husam: if you guys want my advice, i'd suggest that you go to career

services
#39 Husam: and **set** an appointment
#56 Fahim: how i can **take** an appointment ..?
#134 Husam: guys seriously, just **set** an appointment
#137 Husam: they will do everything
#144 Satam: well back to seriousnes ya just **get** an appointment for tommorow
   since its due at midnight
#145 Fahim: can i **meke** the appointment today halio ..?
#151 Satam: i already made an appointment
#152 Satam: im going now

From early on in the discussion, students used the phrase "make an appointment"
in different ways, as shown in "make an appointment," "take an appointment (#56)," "set
an appointment (#39, #134)," and "get an appointment (#144), and "meke an
appointment" (#145). Although Fahim did not spell the word "make" correctly, he
collocated this phrase the best, followed by Satam' use of the same expression, "made an
appointment" (#151), with the past tense of the verb.

As described above, in lexically focused episodes, participants were gaining the
meaning of words by explicitly eliciting responses, using various rhetorical strategies,
jointly constructing definitions of words, and then, requesting further relevant
information, if not satisfied.

Grammatical focus. Students were attuned to grammatical aspects of their
expressions in the online discussion. Such focus refers to exchanges when participants
are asking about forms used to express grammatical categories. Over the 26 online
discussions, students had a tendency to make corrections for most discrete grammar
errors that were straightforward, and they made these connections by way of recast rather
than by providing comprehensive explanations of any grammar rules.

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Self or peer corrections from the beginning of the semester. Although many grammar errors or mistakes remained unnoticed or unresolved during the first three online discussion, some students started showing attention to grammatical issues early on in the semester. Abdullah who did not self correct either his spelling or lexical items corrected his use of the word "live " to "life." However, this self correction was also only partially done, because he did not correct "pan" into "plan."

> Online discussion 3
> #220 Abdullah: Satam are you sure you will pan to start business in university
> **live**?
> #222 Abdullah: **life**
> #223 Abdullah:?

In the thread below, Satam, Abdullah, and Mohammad were discussing the present perfect progressive tense of the verb "increase." When Itsuo thought that the right form of the verb was "has been steadily increased" yet misspelled one of the words as "increaded," Abdullah and Mohammad stepped in and provided the correct use of the verb by recasting the word to "increasing."

> Online discussion 6
> #42 Satam: according to the world marketed engergy consumption, world
> engergy consumption has been steadily **increasing**
> #44 Itsuo: **increaded**
> #45 Satam: **increasing**
> #46 Abdullah: **increasing**
> #49 Mohammad: (2) **increasing**

In online discussions 10 and 11, Adelgunda started providing explicit peer corrections, in the same way that she frequently did for orthographical and vocabulary related issues.

> Online discussion 10

#82 Satam: i find them **on** E-Library and from a magazine
#84 Adelgunda: **on the***** Satam

Online discussion 11
#95 Edgar: many people don't wear helmet cuz **is** expensive
#96 Adelgunda: **it is*****

As exemplified above, Adelgunda was as active in correcting grammar issues as she was for orthographical instances. Her grammar error corrections were provided to almost all participants, and not limited only to those with whom she frequently talked.

Common areas of grammatical weakness: agreement. Although these students who were in this class had passed a university-imposed minimum language requirement, I noticed some major areas of grammatical errors that reoccurred throughout the semester.

The first commonly occurring error category was regarding agreement, including subject and verb and case in both declarative sentences as well as various types of questions in which subject and verb were inverted. Husam noticed his erroneous use of the word "other" when it should read "others" and self corrected his mistakes.

Online discussion 7
#27 Abdullah: what **is** the three parts of the essay?
#33 Husam: alright Esy, now lets give **other** a chance to answer
#35 Husam: **others***
#37 Adelgunda: what **are***** Abdullah Kahlid
#43 Abdullah: thank you.

In online discussion 12, I also noticed some instances in which correct usage of some grammar item was modeled but uptake did not actively take place. In #30 below, Mohammad who had more grammar knowledge than most others used the correct subject-verb number agreement as he was sharing his questions for the cause and effect essay. Following this topic in the ongoing discussion, Edgar, however, did not use this

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agreement correctly, which showed that some students were not yet actively making use

of their peers' comments for their learning or did not yet notice the mismatch between

their own grammar use and that of their peers who were more knowledgeable

interlocutors.

> Online discussion 12
> #30 Mohammad: my cause and effect **questions were** how does the music
> competetion in austin affect both the music scene and urbanization
> #34 Edgar: my cause and effect **questions is** why many people use drugs

Students also noticed some missing components, especially subject and verb in

the sentences, and later added them by adding asterisk(s) (*) to indicate their additions.

This showed students' awareness and attempt to make sentences grammatically complete,

especially paying attention to the area of subject and verb agreement. During online

discussion 17, Adelgunda's explicit error correction continued to surface when Talib

made another subject-verb number agreement error.

> #445 Talib: I think **taxes is** good if we use it to help each other and build our
> society, Not to punish people.
> #449 Adelgunda: **taxes are*****

In the following conversation, Mohammad made the same correcting move by

mirroring the self-correction behavior that Adelgunda often did. In Mohammad's case,

he noticed the inaccurate use of number agreement in the subject "they" and "article,"

and he added the s to make "articles."

> #30 Mohammad: i found evidence from fuqua and
> garcia, it was hard finding them because **they** were really long **article**
> #31 Mohammad: **articles***

In addition to these self-corrections, Adelgunda started noticing other classmates' grammar errors or mistakes and corrected them by providing the correct grammar usage. When Fahim wrote "my topic are," Adelgunda explicitly corrected the phrase by typing "topics****" and mentioned Fahim's name to direct her answer to him.

#34 Fahim: **my topic are** tax, employment, economy and law
#38 Adelgunda: **topics****** Fahimie

Areas of grammatical weakness: countable and uncountable nouns. Another area of common errors seemed due to students' lack of ability in differentiating usage for countable and uncountable nouns. Interestingly, the noun "information" was used by many students as a countable noun, including Fleurette who wrote longer comments than others. However, many of these uses were not grammatical because she wrote the word in its plural form, "…informations" (Online discussion 9, #109, #128, and #167), which showed that she was considering it as a countable noun.

Throughout the semester, students' lack of differentiation of countable from uncountable nouns were equally made by students who were considered more advanced, such as Fleurette and Itsuo, as by less advanced students.

#103 Fleurette: fast food... do you have an clear idea;
#109 Fleurette: to everybody, what do you prefer to have **informations**?;
#128 Fleurette: yes to find **informations** to write about the topic;
#130 Satam: too find **information** for your topic go to the library its helpful;

In comment #130 of the same online discussion, Satam recast the use of the noun "information" but later in comment #167, Fleurette was still using it as "informations." Later, in online discussion 12, Talib duplicated this erroneous use of the noun in comment #66 "…informations…"

Again, the visual saliency and permanence of online discussion can be credited as contributing to participants' attention to language aspects, and leading them to notice and correct mistakes made by themselves or others.

Content-related Episodes (CREs)

Content-related episodes included instances in which participants were actively co-constructing their understanding or knowledge of certain topics or issues being discussed. I considered these types of comments as signs that represented students' active discussion strategy development as well as learners' expansion of their knowledge. The students were overcoming their language gaps by using the target language as a tool and focusing on idea fluency by engaging in continual and recursive negotiation of meaning in the changing context of the conversation during online discussion.

Among content-related episodes (CREs), instances included the students targeting content knowledge beyond linguistic features, and making inquiries of one another by using the online postings as a tool. These instances also showed that participants were intellectually motivated by their free and persistent in-depth questions and their expressions of feelings, ideas, and opinions. The students seemed also quite willing to provide answers to the questions brought up by their peers and to put in energy and effort in collaborating to co-construct their understandings. These CREs are categorized into five sub-categories.

Factual information exchange from the beginning of the semester. These content-related episodes, illustrated in the following example, emerged early on in the semester. Without any explicit instruction, students seemed liberated to ask and answer

questions freely, validate and oppose their peers' views, and acknowledge ideas of their peers who seemed more knowledgeable.

In online discussion 3, students were sharing their own thesis statements for the informative essay assignment and mutually exchanging feedback with one another. While explaining their own thesis statements, students shared information that pertained to their field of study or majors at school. When Fleurette mentioned that her major was kinesiology, Abdullah mentioned in comment #86 that it was related to sport, which was followed by Satam's question whether it was related to sports.

> #84 Satam: Fleurette whats ur major?
> #85 Fleurette: kinesiology
> #86 Abdullah: sport
> #87 Satam: does that have something to do with sports?
> #88 Fleurette: exactly
> #89 Satam: like all sports?
> #90 Itsuo: what kind of study !?!?
> #91 Abdullah: yes
> #92 Itsuo: to be a sports trainer or something???
> #93Mohammad: are you kind of like a doctor? @Fleurette
> #94 Fleurette: all sports, and biology, treatment of injuries, management of
>   sports…
> #97 Satam: like sport nutrition
> #98 Fleurette: i want to be an athletic trainer of sport teacher

As Itsuo wanted to know more about Fleurette's major, she asked for a more detailed explanation (#90). Mohammad was checking to see if his understanding was accurate in #93, and Fleurette responded with a more comprehensive explanation in comments #94 and 98. This type of factual information exchange continued throughout the semester.

Intercultural knowledge co-construction. In addition to collecting factual

information from one another, students often asked about other countries' political

situations and immigration policies. While students were gathering intercultural

knowledge, they blended in their prior knowledge as well as the content of the articles

they were assigned to read, negotiating better understandings.

During the 16th discussion, students were discussing their final controlled research

paper topic, which was on illegal immigration. Starting from Comment 78, students

made inquiries about the immigration policies of their classmates' countries. From this

conversation, students not only practiced communicating in English but also exchanged

information about their own countries' immigration policies and practices.

> Online discussion 16
> #79 Satam: in your countries how does the government deal with illegal
> immigrants?
> #84 Itsuo: How is France ,Fleurette?
> #85 Satam: in Bahrain being a illegal immigrant may result in deportation
> #86 Mohammad: but how do they know that it was at an all time low if they
> didnt catch any of the people who came into the country? @Satam
> #87 Adelgunda: they can give them portunities of scholarity, house
> #88 Adelgunda: In Angola
> #89 Fleurette: we have problem with the immigration
> #90 Adelgunda: people can go there without documentation
> #91 Husam: thats true
> #92 Satam: because thats what it said in the news that it was record low for the
> past 50 years
> #93 Mohammad: yeah but they never know for sure
> #94 Husam: or come with a visiter visa and NEVER leave
> #95 Mohammad: in egypt you can travel without the visa and when you land
> they make you one
> #96 Satam: France has many illegal immigrants do they deport them or detain
> them or give them a temporary residence permit?
> #97 Fleurette: I mean we are close from north africa where there are a lot of poor
> countries, and our country is developped so a lot of people try to come

In this discussion, as students developed their understanding of immigration policies, they first shared their prior knowledge about immigration policies in general and gained knowledge about immigration policies and political situations of various countries.

Eliciting critical thinking. While engaging in content related episodes, students seemed to engage in critical thinking, with comments being evaluated as to whether they were true, partially true, or false, and why they thought as much. During online discussion 2, Itsuo was asking about the most renowned person in the field of entrepreneurship, and Satam was providing his answer to Itsuo's question while also recasting his grammar error. Mohammad, on the other hand, provided his critical view of the entrepreneur that Satam had mentioned, which gave Itsuo some room to determine the legitimacy of the information that he had gleaned from his peers.

> #178 Itsuo: yes do you think you is the gratest entrepreneur in the world??
> #185 Satam: I think the greatest entrepreneur is Donald trump
> #187 Itsuo: who is he??
> #188 Mohammad: no he isn't he sells and buys back his own companies
> #191 Mohammad: hes an idiot
> #193 Satam: hes a very famous business man

In addition, in online discussion 3, students exchanged their views on the qualifications of a good manager. Fleurette, Satam, Itsuo and Mohammad all participated in sharing their views, adding their evaluative comments.

> #57 Fleurette: but what do you do to be a good manager
> #59 Fleurette: give us some example that the university answer to do to be a good manager
> #60 Satam: you have to be organized and manage your time well that's what i think is key to be a good manager
> #62 Itsuo: How about management skill which can detect emplyees ability
> #65 Fleurette: ok
> #66 Itsuo: and assign good position

#67 Mohammad: you have to understand the business that you are working in and control, and look out for any problems.

During the talk in which students shared their ideas on various content-related discussion topics, I noticed that students' comments seemed to trigger their peers' critical thinking, building on factual information they were gathering.

Collaborative problem solving skills. While making content-related comments, students also collaboratively solved problems and completed tasks together. During online discussion 8, students were completing some assigned cloze tasks. Students not only found answers that they thought correct, but also gave critical feedback to their peers' answers.

Online discussion 8
#20 Fleurette: we can use "then", but I think that "second" is more appropriate
#21Mohammad: i think we should use second
#22Mohammad: in the third one i think we should use "when"
#23 Fleurette: i agree Mohammad
#24 Husam: you can always play with transition
#25 Adelgunda: yeah
#26 Itsuo: Actually page 87 there is a option do not we chose it???
#27Mohammad: wat bout the 4th?
#28 Husam: i mean, many can work perfectly at the same place
#29 Adelgunda: depending on the context

Later in the same discussion, students moved coherently to complete exercises, and the turns among students were taken faster than at the beginning. They were working as a very efficient team to tackle each cloze exercise, asking and responding to one another. In this collaborative problem-solving activity, students participated in the discussion as fluidly as if they had been speaking in face-to-face interaction.

Mutually checking their understandings of readings. While exchanging

content information with one another, students spontaneously checked their

understanding of one another's ideas, along with the accuracy of information that they

were receiving during the discussion. As an example, when students were discussing

topics on illegal immigration topics during online discussion 17, Abdullah asked about

the consequences of helping illegal immigrants who did not have proper documents.

Fleurette in comment #198 pointed Abdullah to the articles assigned to them, and Satam

answered according to his understanding of the articles.

> Online discussion 17
> #197 Abdullah: what will the consequences be if u assist someone without legal
>   documantation?
> #198 Fleurette: it's in the articles that you had to read...
> #199 Satam: London grants assylum to many activits worlwide
> #200 Satam: the consequence we said was deportation
> #203 Fleurette: something like 2000 dollars
> #206 Adelgunda: yeah then they are deported

In this thread, Fleurette picked up Abdullah' question and asked about more

detailed information from the articles. While accumulating knowledge from the readings,

Satam, Edgar, Mohammad, Talib, and Abdullah were actively exchanging information to

fill the gaps they had and collaborated in completing answers to Fleurette's question. In

this process, students were not only answering the questions raised by Abdullah and

Fleurette, but also accumulating their knowledge together through a comprehension

check made with their peers.

In online discussion 19, students asked for a summary of the assigned articles for those who had not read them. Satam (#75, 79) asked about the main points of the articles, and Mohammad provided his responses to the request (#83).

> Online discussion 19
> #75 Satam: Somone summarize the Garcia article for those who didnt read it
> #76 Mohammad: i thought it had more information, and easy to understand facts
> #77 Husam: true
> #78 Adelgunda: and Satam did you read?
> #79 Satam: or what are the main points of the article?
> #80 Satam: yes
> #81 Husam: si
> #82 Husam: so "Garcia" was talking about the Civil, Criminal, and Immigration Consequences
> #83 Mohammad: it discusses the primary civil, criminal, and immigration-related penalties associated with immigration-related document fraud. "Garcia's article"

Although there was no content-related episode found from online discussions 19 through 22, I began to notice other phenomena in the later online discussions.

Writing-related Episodes (WREs)

Among the exchanges students were having, I noticed discursive instances in which they were making inquiries related to theoretical concepts and rules about academic writing and essays in particular. I coded these episodes as *writing-related episodes* (WREs), and I present them here in six sub-sections.

Applying new theoretical concepts to writing academic essays. Since the day when students were first introduced to a variety of fundamental topics and concepts about academic writing, students actively reviewed these concepts during online discussion. Because these concepts about academic writing were new to them and some were from countries where they had not learned particular norms or rules as to how to write

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academic essays, students were making these writing-related inquiries even until the last

online discussion of the semester.

One writing-related instance that highlighted how students actively co-constructed

knowledge was found during online discussion 12. Asking and answering one another,

students were reconfirming their understanding of several conceptions of academic

writing that had been introduced to them during the lecture session of that day. In the

middle of the conversation, Itsuo raised a question about the definition of the term

rhetorical situation, which initiated several inquiries about the meaning of the term and

sub-questions that led everyone to a better understanding of *rhetorical situation.*

> Online discussion 12
> #22 Itsuo: so what is the definition of rethorical situation!?
> #31 Fleurette: i mean cause/effect i see but here... if someone can explain to us
>   that would be nice
> #34 Fleurette: no rethorical is different from cause/effect
> #39 Mohammad: does anyone know what a rhetorical situation is??
> #41 Talib: writer
> #45 Husam: whats the meaning????
> #46 Fleurette: yes writter, purpose, audience... but it doesn't help
> #67 Fleurette: guys let's talk about rethorical essay because for the moment
>   nobody knows anything about this one, or if anyone knows something
> #69 Itsuo: writer, audience purpose, contexts and what??
> #71 Adelgunda: writer is the person who writes and organize the writing
> #74 Fleurette: purpose?
> #76 Husam: Mohammad most know about that
> #78 Husam: he knows everything
> #79 Mohammad: im not sure but i think if you connect all of those things, than
>   you can create a rhetorical essay
> #80 Husam: help us out Mohammad
> #81 Mohammad: maybe??
> #82 Itsuo: i see
> #83 Husam: yes, you're right Mohammad

Students solidified their understanding of key concepts addressed in class when they attempted to apply them to their actual essay writing. Itsuo asked, "so what is the definition of rethorical situation!?" (#22), and later in the same discussion, Fleurette asked how she could write a better "rethorical essay," by which she meant an essay that would reflect a rhetorical situation. Fleurette took the lead in unfolding the discussion topic step by step, applying the concept of *rhetorical situation* to Adelgunda's essay topic, "natural diseases" which should read "natural disasters." Although she did not use some phrases most accurately, her questions and comments initiated an in-depth discussion among her peers, which resulted in reviewing key concepts on academic writing and evaluating one another's essay topics accordingly.

When Mohammad provided his answer to Fleurette's question by blending the definition of *rhetorical situation* and applying it to other students' topics, I could see that Mohammad's answer was not a mere exchange of factual information or provision of definition, but more of an evaluative application of key concepts on academic writing to students' essay assignments at hand. He and other students were creating and recreating new knowledge by being engaged in this discussion. Students were actively creating meaning among themselves, advancing one step beyond factual and canonical knowledge regarding how to form a topic for an academic essay transmitted and presented to them in class.

Determining legitimacy of an essay topic while exchanging constructive feedback. Students' discussion continued in the area of essay topic. While determining the kinds of topics for essay type, students showed how culture interplayed with their

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meaning making and knowledge creating by making connections among what they knew previously, what they had learned in class, and the new knowledge they were creating with other peers in online discussion. This was important because students realized that the foci of their essays needed to change whenever they wrote different types of essay.

In online discussion 7, students were having a fruitful discussion about various essay topics, starting from whether a topic should start as something general or specific. Mohammad in #50 brought up his point about intercultural differences in their past history of writing, and how they were being ushered to write in the same ways when writing academic writing. Acknowledging how these differences might affect their choice of topic, Mohammad suggested that one should start with a topic that was more specific, rather than general, as shown below.

> Online discussion 7
> #37 Fleurette: everybody what do you think about topics in general, we should find a general topic or specific topic
> #50 Mohammad: i think a specific topic, because a lot of us have been in different cultures and are from different countries, or because it is just easier for some people to have their own topic
> #51 Husam: and i guess that answers Fleurete 's question
> #52 Husam: its tooooo general
> #53 Husam: you now what i mean??
> #54 Itsuo: yeah!! its better focus on the topic
> #55 Edgar: i agree with Mohammad
> #57 Satam: i think its good topic but its needs to be narrowed down abit

While establishing qualities of a legitimate topic in an academic essay, students offered their views on whether the topic should be specific or general.

Students' discussion of their essay topics extended further to evaluate a causal relationship found in a topic. In the process of discussing whether one topic was suitable

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or how it could be improved, students named their own topics and openly invited others

to give their own views by asking one another specific questions to improve the main

idea. These kinds of mutual exchanges occurred naturally without any particular

instruction from me and developed throughout the semester, as online discussions

became a crucial venue for knowledge sharing and exchanging for essay topics.

Students continued discussing how to modify their research topics. Fleurette and

Itsuo overtly presented their topics and asked for constructive feedback from peers (#38,

#43). Fleurette mentioned why she thought her topic was not quite suitable yet, and

Mohammad asked her how she thought she should modify her question.

> Online discussion 10
> #38 Fleurette: after my research about my topic "foreiign students are attract by
> US" i understood that I have to modify my questions because informations
> that I obtained are not exactly what I researched
> #43 Itsuo: what do you modifty??
> #47 Fleurette: the effect questions cause i find informations about people who
> come in US, informations about foreign students but there are no relations or
> just a few
> #50 Itsuo: I see
> #51 Fleurette: yes but my questions were about the iMahdi and the powerfull of
> US
> #52 Fleurette: so it doesn't work
> #55 Mohammad: so what were your researchs about Fleurette? what did you
> modify your question to?

Edgar asked Itsuo what his topic was about, and Itsuo shared some background

information about trends in Japan's study abroad students, as it compared to other

countries whose students usually wanted to go abroad. Edgar asked Itsuo where he had

found the information about Japanese students, followed by Fahim's question about

whether he would only talk about Japan's case. Itsuo answered that he wanted eventually

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to compare some Asian and European countries, while Satam offered his idea that Itsuo

should add the reason for and purpose of students' study abroad.

> Online discussion 10
> #79   Edgar: what is your topic Itsuo??
> #81   Itsuo: Admar my topic is studying abroad.
> #85   Itsuo: Why student want to go abroad nontheless japanese student do not
> want to go to study abroad.
> #88   Itsuo: this kind of reserch question but I have not decide yet completely
> #100 Edgar: nowdays many studen wants to study abroad, but u are saying that
> japanise people wont where u got that information? Itsuo #106 <<< I got
> information from newspaper in Japan
> #115 Itsuo: Nowadays, comparing to other asian countres Japanese student do
> not tend to go abord!
> #123 Fahim: essy you talk about students in japan only ?
> #131 <<< No I also use current situation in Cnina and Europe
> #132 Satam: you need to adress all the international students who go abroad in
> search for better education globally
> #133 Itsuo: and I wanna compare to those countries.

This kind of constructive feedback exchange occurred very naturally and

frequently throughout the semester, and it became an invaluable resource for students in

forming their essay topics. Students' voluntary moves shown by their causal discourse

markers became particularly beneficial because feedback from their peers embellished

their understanding of course lectures, new concepts about academic writing, and their

critical views on the relationship between topics and essay types.

How to organize ideas with supporting details. In addition to discussing the

nature and characteristics of essay topics, students also discussed how to organize their

ideas to highlight the purpose of each essay type. For example, when students were

assigned to write a cause and effect essay, Fleurette asked students how to arrange her

ideas to show the causal relationship of the topic she wanted to write about.

Online discussion 7
#168 Fleurette: everybody, do you have ideas about the organization of your
        ideas and show cause and effect?
#170 Satam: maybe an thought outline would be helpful for organization
#176 Husam: we can use statistics
#180 Husam: and quotes
#182 Fleurette: yes nice, but there are some kind of words that we can use
#185 Husam: quotes of people that are experts on the area youre writing about
#187 Husam: oh, yeah
#189 Fleurette: i mean maybe " this statistic shows that..."
#190 Fleurette: to show relation between cause and effect
#191 Husam: words like "as a result, which resulted in, therefore, thus,
        because..etc"
#192 Satam: (tumbleweed)
#193 Adelgunda: yes
#194 Fleurette: yes Husam good idea

In response to Fleurette's question, Satam talked about the usefulness of an

outline, followed by Husam's suggestions to use statistics and transitional signals.

In addition, students realized that knowing how to choose and write supporting

details was as important as structural organization for an academic essay. Husam

initiated a question about what other students thought about adding one's personal

experience when writing. Itsuo asked if Husam had meant personal experience as part of

supporting details in an academic essay (#104). Mohammad directly provided his

feedback about Husam's idea, mentioning that it might not be good for a process essay,

while Adelgunda mentioned that it would sound too emotional. Husam further proposed

that it could sound more powerful and be more convincing. In comment 117, Husam

made a crucial point, saying, "each purpose or type of essay has specific ways to

strengthen its structure." Although Husam's suggestion to include personal experience

was not accepted by other peers as an effective way to write supporting details, Husam

himself, as well as other students, learned that every essay type has specific ways to support its main topic.

Later in the same discussion, Fleurette asked again regarding students' preference for the kinds of supporting details, and Abdullah and Satam stated they preferred more objective information found from articles, and Mohammad presented other kinds of supporting details, such as articles, experiences, statistics (#129), and common sense (#131).

Collecting information from the readings. For their final research paper, students were given to read three articles that the students and I had chosen together, after searching for other possibilities. In the process, students learned to come up with specific categories for illegal immigration issues to support their thesis statements. Learning occurred by students' actually trying, doing, and applying, and knowledge was created through actions and interactions between teacher and students as well as among the students themselves.

In online discussion 19, students discussed whether and how they found articles to form their supporting details. In this thread, students were deciding whether to come up with categories of illegal immigration inductively as they read articles or to have categories in mind deductively and try to find evidence and supporting details for them. Students shared their attempts in finding categories and organizing supporting details, and Fleurette in comment 63 synthesized her peers' comments by saying, "you can change a little bit your topics and adapt your thesis statement after reading articles if you

need." This was the result of collaboratively discussing ways to collect information

based on categories emerging from their readings.

> #55 Husam: i think we did a mistake by choosing topics and then reading
> #58 Satam: we should have choose the topics later ur right bu ali
> #62 Husam: I think it would be way more easy if we have had read first and then chose our topics by the details that we got
> #63 Fleurette: but you can change a little bit your topics and adapt your thesis statment after reading articles if you need
> #74 Fleurette: ysshito, if you don't find anything you can remove this topic and take an other one which yuo are sur to find citations

After working by themselves and sharing their difficulties during online

discussion, the students realized and reached consensus on the ways they should flexibly

modify their initial topics as they found relevant evidence and resources from their

reading. Later on, as most students in the conversation realized they had all experienced

difficulties in finding the right resources for their research paper, they came up with

possible solutions together.

> #58 Satam: we should have choose the topics later ur right bu ali
> #62 Husam: I think it would be way more easy if we have had read first and then chose our topics by the details that we got
> #63 Fleurette: but you can change a little bit your topics and adapt your thesis statment after reading articles if you need
> #74 Fleurette: ysshie, if you don't find anything you can remove this topic and take an other one which yuo are sur to find citations

Students were moving across categories based on their prior knowledge,

providing their ideas, and actively creating new areas of knowledge while applying what

they had learned in class when they actually went about finding resources.

Collaborative paraphrasing. After learning from one another's feedback about

ways to select supporting details for their essays, students started discussing how to use

what they had found when they wrote their essays. One of the strategies they had learned

in class was to paraphrase outside resources and weave those paraphrases into their

essays. In online discussion 11, Adelgunda confirmed her conceptual understanding of

paraphrasing, and Itsuo answered that it was to rewrite any given piece of discourse or

writing using one's own words.

> Online discussion 11
> #8 Adelgunda: what you guys think about paraphrasing?
> #10 Itsuo: rewrite using our own words right?

Later in the same discussion, students collaboratively paraphrased a paragraph,

while exchanging feedback on what one peer had paraphrased.

> #28 Mohammad: Each year there are more than 1000 deaths from bicycling,
>   head injuries make up for a quarter of those deaths.
> #30 Husam: i think we have to rewrite the whole paragragh in our own words but
>   still "giving the same maening"
> #32 Mohammad: i did the first sentence is it good?
> #33 Fleurette: i agree Husam
> #34 Adelgunda: let me check it
> #37 Husam: Mohammad, you've done NOTHING! you just switched the parts of
>   a sentence
> #38 Fleurette: Mohammad your sentence is good
> #39 Husam: I dont agree
> #40 Husam: O.o
> #41 Mohammad: thats what u have to do
> #42 Husam: with all do respect

In this paraphrase exercise, students actively exchanged their ideas on how to

paraphrase each sentence of the paragraph at hand. Students were willing to try showing

their paraphrases multiple times until their peers agreed with the way they had written

their text. Explicit and covert feedback was mutually offered among students, and each

action that students proactively took created cumulative interactions and had learning effects among them.

Students did not merely depend on what they were told in class, but seemed to realize that learning was not limited to something that was transmitted to them as rules and norms to memorize and follow. Instead, learning, to them, included active notions of applying, adapting, revising, and creating new knowledge, while being engaged in critical thinking and an evaluative process in an iterative cycle.

How to format essays. One of the new areas about academic essays that students learned was how to format their essay properly according to some formatting rules. In online discussion 14, students reviewed aspects of formatting, including how to use headers, footers, page numbers, and alignment. Prior to the class instruction about how to format an academic essay, students did not pay much attention to their written assignments in terms of how they should be formatted.

> Online discussion 14
> #13 Adelgunda: what is the topic for today ?
> #20 Satam: its the appropriate format for academic essays
> #21 Mohammad: it has many rules
> #22 Satam: for some classes its manditory
> #29 Mohammad: Header
> #30 Mohammad: Top right
> #30 Mohammad: name
> #34 Mohammad: and pager number
> #35 Satam: name professor class date

In another thread in the same online discussion, Satam told his peers that he had learned about hanging indents for the works cited page. While explaining details of what he had learned, he reviewed how to write these parts in the essay accurately. In the

process, other students, such as Fleurette, Mohammad, and Abdullah, also offered what

they had learned and completed their knowledge creating process.

> #49 Satam: i learnt about the hanging indent which is on the "works cited" page
> #54 Fleurette: that is the last step :) but it's ok
> #56 Husam: any comments, guys, about the "work cited" page???
> #58 Fleurette: for "works cited' i learned that we have to put space at the
> beginning of the 2 and 3 line
> #59 Satam: ye the title should be left as is and not bolded or italized
> #60 Mohammad: i learned bout the hanging indent
> #61 Abdullah: make double space
> #99 Adelgunda: I learned that MLA style is most commonly used to write
> papers and cite sources within the liberal arts and humanities.
> #133 Satam: i learnt how to make enter without adding 10 spaced to the word
> document

Students also revisited areas that they had not learned completely, such as how to

write a title and which words of the title should be capitalized as well as the difference

between header and heading.

These instances seemed to serve as a way to bond discussion participants for the

continuing development of the discussion, by allowing them to share their thoughts,

feelings, difficulties, frustrations, as well as helpful tips, ideas, and guidelines during the

process of writing a research paper.

Research Question 2

To answer the second research question, about the nature of the experience of

students who participated in online discussions and timed writing over the semester, I

analyzed the treatment group students' interview data, using a grounded theory approach

with themes and topics emerging from my reading of the data. Below I report on the

analysis of the interview data followed by survey data with descriptive statistics.

Interview Data

My goal in looking at the interview data was to understand students' perceptions of the online discussion and weekly timed writings that took place in the treatment section. Using a constant comparative analysis and inductive analysis (Corbin & Strauss, 2008), I built a theory related to students' perceptions of online discussion and timed writing from an inductive, open, and axial coding process. Themes emerging from interview data included the affordance of each type of writing activity, individual writing and discussion participation, students' learning experiences, issues affecting the evolution of online discussions, preference for discussion medium, and students' overall perception.

Analyzing from Corbin and Strauss's (2008) concept of *paradigm* and *process,* this project provided a way to bridge online discussion and timed writing as a process for international students to develop their academic writing skills. *Process* is "an ongoing flow of action/interaction/emotions occurring in response to events, problems, or as part of reaching a goal." The events, problems, and/or goals arise out of structural conditions and the actions/interactions/emotions that are taken in responses to promote online discussion and L2 writing improvement. Action/interaction/emotions may be "strategic, routine, random, novel, automatic, and/or thoughtful" (Corbin & Strauss, 2008, p. 248). This process is also viewed with the concept of *paradigm,* which includes "conditions," "inter/action/emotions," and "consequences" (Corbin & Strauss, 2008, p. 89).

From data analysis, various topics under each theme relevant to online discussions and timed writings emerged. Below I provide excerpts from interview transcripts that support each *theme*, in addition to memos that I wrote throughout the data analysis

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process. Findings are described according to various types of writing-related activities, such as online discussions, timed writings, and individual essay assignments.

Affordances of class activities. Students reported a variety of aspects and affordances of writing-related class activities.

Time pressure influencing their thought processes. As I asked about their experiences in writing-related class activities, students spontaneously compared their individual writing and online discussions stating that during online discussion, they were improvising their performance, while thinking and editing at the same time, without having enough time to think about what they were going to say.

For online discussion, some students, such as Husam, viewed this fast-paced flow of real-time online discussion as a challenge for him to master. Others, Edgar among them, considered other peers as very good at typing fast and felt they did not have enough time to finish their ideas before the topic had ended.

> **Husam**: *Maybe one of the challenges is that you don't have enough time to come up with or prepare for the answers, and that puts pressure of the students who has to submit the answer in a short period of time.*

> **Edgar**: *We were skyping in group in online discussions, sometimes there are people who are really fast to another topic, sometimes I don't finish my ideas about the first topic we were discussing.*

Without favoring either discussion mode, Fleurette highlighted another time-related aspect of online discussion. She thought that compared to face-to-face discussion, online discussion gave her relatively more time to think because she had time to consider before she entered her comments into the discussion.

Fleurette: *I think both of them are important. I think both of them are important. I don't prefer either Skype or face-to-face. It's different and both are necessary. With Skype, we have time to reflect, to think about a little but more about what we want to say. In face-to-face, sometimes we go out of topic to quickly, some guys who speak Arabic go outside and drink and we go outside of the topic.*

Fleurette further addressed that online discussion was more conducive to students helping one another by exchanging multiple perspectives, whereas face-to-face added some extra burden of vocalizing their ideas and breaking through their affective barriers, such as shyness and unwillingness to say anything. In that retrospect, Fleurette mentioned that exchanging their ideas by "writing" during online discussion was a more effective way to have a discussion in class.

As descriptions of how each one tackled online discussion tasks, these answers showed that students did not consider these online discussions as something like the online casual conversations they might have done in the past. They also seemed to be inspired to provide critical opinions that could contribute to others' knowledge, as they also expected the same thing from others. Students' answers also revealed their appreciation of how individual students showed different writing styles during online discussion. Other answers from interviewees showed that they gradually cared more about accuracy in their writing during online discussion, even though they initially remembered it as a tool for casual conversation, such as chatting, not having had online discussion experience in their previous classes. Many other students reported that other students in online discussions corrected their grammar, explained the meaning of difficult vocabulary words, and exchanged cultural knowledge that they were not able to gain elsewhere.

In terms of the timed writing, students also stressed how time played an important role in its educational and instructional quality for their second language writing. Husam answered that timed writing influenced his thought process in terms of thinking about the best way to write a good paragraph in a way that would receive a good grade in class. Here, I could see that time played a different role, such as planning for a paragraph and thinking about grading criteria to modify and edit their timed writing.

Participants also realized that, because they were international students and English was not their first language, they knew they had to improve their English skills. Many reported that the online discussion environment forced them to think and type fast in English, and as a result they were learning to exchange ideas on topics by supporting their views with information in a new acquired language. Students were used to typing in their own native languages and had frequently used online translator or dictionary in the past, but they reported that through the online discussion activity in this class, they improved their typing as well as language skills. This was also the case for timed writing, as described below.

Q11: *What do you think about timed writing?*

Itsuo: *Timed writing push me write paragraph in limited time. Timed writing affect students…getting familiar with writing and giving students opportunity to check their improvement.*

Adelgunda: *I think it is a good idea. As professor can see, students can write well not only at home. We know that almost students, I mean some students, they don't write on their own. Although, it makes us a fast writer. It makes us a fast writer. We can control the time, see the time, how much we can write.*

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When students talked about timed writing, they mentioned different aspects of being "pushed" to write under these new circumstances. This proved to be a good exercise for international students, as they reported seeing their improvement over the semester.

Typing skills affecting the outcome. In addition to time pressure affecting students' writing, their typing skills affected the outcome of their writing immensely. Although technical, tangential, or not seemingly integral to determining the quality of students' writing, most students expressed their difficulty in typing fast in English, which increased their burden and determined to some degree what their final contribution to online discussion and timed writings would be.

Q1: *What is your writing like in an online setting with other people?*

Fahim: *…I have just one problem; when I type, I do not type quickly. That's the problem. I usually type in Arabic.*

Husam: *Like for me, typing is an issue. Like, I don't type fast. But for sure, since I started studying English and I started writing in English even with my friends, twitter, Skype…, and even texting. Even texting my friends who speak Arabic. I still feel like my typing is an issue, I guess, my hands does not work well with keyboard. For example, I tried with piano and my hands don't work well with keys.*

Husam mentioned that typing was not an issue in his first language, highlighting how freely he could express himself in various modes of writings in Arabic, such as typing messages for public online distribution. He emphasized that he cared very much about the quality and interestingness of his writing pieces, and he preferred not submitting them unless they were interesting enough to readers. He mentioned that this was the same for academic writing, and due to his difficulty in typing in English that he

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felt affected the quality of his contributions in online discussion or timed writing, he felt very hesitant to submit his postings.

When I asked what they focused on during online discussion and what kinds of challenges and difficulties they faced, they shared some of their strategies. Most students mentioned their difficulties in typing, especially in terms of how it affected their participation in the fast pace of discussion flow.

> **Itsuo**: *I focus on catching up with discussion because the speed is fast and they talk what they want to say….Give up...hahaha. Just try to answer what I can. Yes, it's a strategy. I should talk to one person. Ask them. Ask friends to discuss step by step. Ask them to focus on one topic at the same time*

However, students also realized the merits of computer-mediated writing exercises in class, regardless of the challenges they felt when they tried completing each task while managing to type in English, even though some of them had to start typing by finger strokes initially. Furthermore, as shown above, students were connecting their typing issues to linguistic and discourse levels, such as spelling and the content of their writings.

> **Husam**: *I feel like this exercise is creative, that's my first impression. Second of all, I feel like keeping typing and keeping online discussion will help me a lot with typing, even I struggled with that a lot… So, in my point of view, I believe that online discussion is better for students, if they do it with the proper way. So, as I mentioned, the advantages of online discussion is the students are confident to type fast and express their ideas …*

> **Fahim**: *When you write online discussion, you need to type very fast and you need to know exactly the spelling, so that's the hard thing for us, because spelling is hard. Some more, you need to type on word document, you can see whether it is correct or not, but online discussion, you have to type really fast. This is one thing during this semester. Actually, online discussion was helpful very much this semester. When I was doing Facebook, I write more than before. Because I do it*

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twice a week, online discussion and timed writing, and I think it was helpful for
me.

For all writing related class activities, whether it was online discussion or timed

writing, students mentioned that, due to the fast pace and time constraint, they were

forced to type quickly to ask questions and make comments on a topic, talking to several

peers at the same time, or composing a paragraph according to a given topic.

Differences in language registers. Students also noticed the formality of

language used by their peers and themselves in terms of word choice and sentence

structure. I also found that the name of the online discussion medium, *Skype*, affected

students' perceptions toward the online discussion as a class activity mediated by the

discussion medium.

> **Fleurette**: *…When it is a discussion, we have to really quickly think about what*
> *we want to write about. When it is a discussion, it is about the life of every day.*
> *We speak how we speak all day…In online discussion, it is a different language.*
> *We don't write it the same way*.

Like other participants, Fleurette differentiated face-to-face and online discussion

in terms of her language use. When this question was asked, the majority of the students

made a point to differentiate their responses between online discussion in class or online

writing in general. Itsuo addressed that casual language during online discussion was due

to time management, clearly indicating that he noticed a difference in word choice and

sentence structure. Adelgunda also addressed that her previous online discussion

experiences, mainly associated with *Skype* or Facebook, had been very casual in nature.

> **Itsuo**: *Online discussion is more casual than individual writing, so we can use,*
> *ah…, academic words, we don't have to use academic words in online discussion.*
> *Then, also… just we write only sentences in online discussion, not*

paragraph…Word choice and sentence structure is difference because in an online discussion I have to write sentence quickly, so sometimes become casual way.

Adelgunda: *When I write with someone on Skype or Facebook, or everywhere, I write like...I write informal, not like formal essay.*

Husam also mentioned that others were typing in an informal way, using jokes and emoticons and other acronyms, instead of writing formally as expected in an academic setting. He also mentioned that the atmosphere of the online discussion was determined by all the participants, and he tended to follow the attitude of the majority of students, only when the conversation was going seriously and well aligned with the day's topic. However, in other cases, such as when peers were making jokes or not discussing topics seriously, he resisted engaging with them.

Husam: *What I notice, for this class particular, my classmates tend to type in a non-formal way, because it is called skyping and they tend to think it is typing to friends. So, they make jokes and make short forms to describe something, LOL, instead of using high-level academic phrases. That was one of the things I noticed.*

… Disadvantages, though, are that chances are, the fact that students could tend to type or talk in an informal way, instead of using academic phrases, because as we all know that Skype is the program that everybody uses to chat with friends.

He also highlighted that because of the widespread use of *Skype* as an informal chatting tool, it was easy for his peers to engage in the conversation in an informal way, rather than formally.

Individual writing and discussion participation behaviors. As a second theme from the analysis of the interview, I found that the students made several comments comparing the individual timed writing activity with their participation in the discussion.

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Timed writing with planning time and outline. As a structural question, I asked students about the entire process that they went through when they were in online discussion and when they were writing under timed conditions for timed writing. For timed writings, students reported a somewhat different procedure for their writing, and an example is described below. This answer gave me various perspectives on how each student tackled each online discussion differently.

In the following examples, Talib, Mohammad, and Fahim described what process they went through when they wrote their individual timed writings. In addition to writing their names and course information, most students mentioned that they took some time to plan what they were going to write, either by coming up with a few points or by writing an introductory statement and some form of brainstorming sketches prior to their writing. Talib described a few technical steps, such as writing basic information and his name, before he started writing.

> **Talib**: *Outline first, and then I just need to open a new document on the word program and insert the header. And then, I need to write a header, my name, what's the number of timed writing and the date. After that, I just start writing.*

> **Mohammad**: *Other than writing my names and stuff…I start off with an introduction sentence about the subject given by the teacher. I try to give three main points. And later on, the timed writing, I try to back them up. If I do finish on time, there will be a conclusion and my own opinion about the subject.*

In Mohammad's case, he mentioned that he tried coming up with three main points first and then added details later, which led him to write a conclusion based on the supporting details.

> **Fahim**: *I start about my topic, what I should write about it, describe the thing, what the timed writing is about. I give some idea. Last thing is what we should do*

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about. There is different idea and differences about the topic. Each timed writing, we have different idea- cause and effect, or normal writing, I don't know.

Husam: *Ok, so, first I try to understand the question. And then I start thinking about what are the points, what are the three points to be more specific that I could talk about. I spend about 2-3 minutes managing or organizing, trying to find solid points that I could rely on while I am writing a paragraph or the essay. I spend three other minutes to find examples, and I guess I would call this step as brainstorming.*

And even though some students think this is a waste of time, I would rather spending even 10 minutes to come up with a good outline, which is gonna make it so easy for me to finish the essay. When I start writing using my outline, I try my best to make it as interesting as possible. I always want my conclusion be as powerful as the thesis, and when I have time, I go back and check if I made any mistake.

Including Husam and Fahim as shown above, students showed different degrees and ways of planning their timed writings in the form of contemplating their writing topics and narrowing down what they were going to say, or making an outline to start with an interesting beginning and end with a strong conclusion, followed by self corrections to check for their errors and mistakes, if time allowed.

Online discussion with mutuality and reciprocity. In terms of students' propensity for participating, most students mentioned that they read what others said first before they made any comments while determining whether those comments should be influential in changing their own initial ideas. Some students also mentioned that asking questions and getting answers from their fellow students characterized their participation in online discussion, whereas others mentioned that getting knowledge from readings first with a view to be able to provide answers was their priority.

When I asked this question, I had to give many examples for students to

understand the question and also break down the question into more detail. Some

students took time to read others' comments first before they started typing, whereas

others took a different approach, such as greeting and starting from a casual conversion to

get their feet wet.

> **Itsuo**: *Just write. I try to…I care about writing. I try to write longer, more elaborate, and understandable or something.*
>
> *So, I guess, individual writing is about what I think and my point of view, but when it comes to online discussion, I always like to listen to other people first, where they are coming from, before I give my own opinion. And that usually affect my point of view, like sometimes I don't change my mind or the way I think of something. But the points that other people, what they are saying is true, something about it, I may change my mind about it. On the other hand, when I write on my own, individual writing, I am on my own, and nothing can change my mind, I guess.*

Itsuo mentioned that during online discussion, he tried to listen to other people

carefully and the rationale behind their thoughts, which in the end affected the comments

that he made. Exercising his discretion, he chose whether to change his initial ideas or

not, fully giving ground to mutuality and reciprocity.

> **Husam**: *For me, I first start listening to others and like to ask questions. I prefer not to over write what I think about the issue. I don't like to write longer sentences as much as listening to others. When I feel like everybody gave their own opinion, I start writing my opinion or arguing others' opinion that I do not agree, politely, for sure. If I am arguing or discussing, if their ideas is better than mine, I do not change. If mine is better than others, I don't mind. Actually, what I care about is we have to agree on something at the end, either it's my point of view or somebody else's point of view.*

Husam who began by seeming simply to stare at the screen mentioned that he was

paying more attention to reading others' thoughts before he made any contribution in

written comments. When he saw a disagreement between his own ideas and others' ideas, he negotiated in his thinking which ideas were better.

Students' responses regarding their participation pattern and what they did during online discussion were characterized by their awareness of reciprocity and mutuality, which expanded their learning experiences.

Learning experiences. As a third major theme that emerged from interview data, I discovered that students described their learning experiences from various perspectives.

Affordance of face-to-face and online discussion learning environments. Most students mentioned how each learning environment made a difference in their learning, participation in class activities, and acquiring content knowledge. Edgar first acknowledged that face-to-face and *Skype* discussion environments were different because of the perceived difference in how thoughts and ideas were transmitted in the two environments, differentiating between speaking and typing.

> **Edgar**: *Yes, the environment makes difference. I prefer face-to-face, because I can see people are really inclined face-to-face than skyping. Because it is different when you are talking or when you are writing.*

On the other hand, Talib mentioned that because the topics they learned and discussed during face-to-face discussion were still carried over to online discussion while his ideas were still fresh, he could put his thought into words and organize them better for his assignments.

> **Talib**: *It's good because I have to write about something that we just discussed about it. And the idea is still moving around my mind. That's why I can put them into the word fast, and I can organize fast when I do the assignment.*

Abdullah highlighted some more positive aspects of online discussion because he could search for additional information online, asking questions of his peers. He was also aware of some possible technological glitches that might be potentially troubling during online discussion.

> **Abdullah**: *I mean, Skype is better because you can, if you need something you can search on the Internet. You can discuss with your friends and with your classmates. It saves your time. Skype because, I mean, how they feel, some of them like Skype, some of them face-to-face. Skype you can ask and answer questions. If you don't have answer to classmates' question, you can search online and answer the question. May be the Internet shut down or the Internet disconnected, you won't be able to connect to the person, compared to face-to-face, when something happen.*

In addition, Mohammad pointed out that online discussions afforded a venue to compare and contrast his and his peers' writing, exchanging feedback with one another.

> **Mohammad**: *The difference is that I can't compare and contrast my writing with other people's writing when I write by myself. And it has been harder for me to do it by myself, without others helping me out. And it's a better experience, online discussion. It's easier because I got to know each classmate better. It helps socialize.*

As exemplified above, students highlighted a variety of aspects of online discussion as contributing to their learning, and by understanding the affordance of each learning environment and tailoring them to their learning styles, they seemed to capitalize on the benefits of online discussion.

Permanence of the online text. Due to the software's automatic saving feature, online discussion transcripts were permanently published on the screen after each discussion. For *Skype,* this feature was more permanent that other discussion media because the chat logs of all discussions were saved one after another and could not be

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erased. Whenever students logged on to *Skype,* the chat record was there among all other items in the history.

As one of the benefits of online discussions that students addressed, all students pointed out that they were able to retrieve previous online discussions. They went back to reread online transcripts both during the discussion and after class hours, in addition to when they were absent, which they mentioned as one of the benefits of online discussion. As Itsuo mentioned below, students were able to review the content of the discussion so as to stay centered and exchange feedback while various topics emerged and developed.

> Q5: *Describe what you noticed about how you and your classmate wrote during online discussion.*
>
> **Itsuo**: *We can understand the problem and also care about others' opinion easily, because we can review, we can check others' opinion,…review… when the discussion proceeds, we can come back to the point. We can feedback others' opinion. I wanted to say, review, check feedback.*

What was more interesting to me was that students developed self awareness of these benefit themselves. Even though I did not address the fact that they could go back to the discussion logs when they missed class or needed to reread the comments from other students, they were going back to the online discussion logs on their own and tried to understand the content of the discussion better, especially when they felt they had missed some part or wanted to get more understanding out of the discussion.

> **Mohammad**: *I think it's good. I liked it because if you want to go back what someone said and give answer, you can scroll up or read questions again and see who wrote the question. I think it's both; it's distracting and fun.*
>
> **Satam**: *Skype. The advantage is our thoughts are presented clearer when written, rather than spoken. And another advantage is if a student gets lost during Skype*

conversation, he or she may scroll back in order to re-read and understand and we can't do this face to face conversations.

Mohammad and Satam both mentioned the fact that they could go back to the previous comments or topics while the day's online discussion was still going on, which was not possible during face-to-face discussion. Itsuo and Husam also acknowledged the fact that they could go back to the discussion content, even after the discussion was over or when one had missed class.

> **Itsuo**: *They...everyone have to wait until finishing he or she talking. Advantage of Skype is we can check, reconsider what we wrote after finish Skype, or discussion. I can check our contribution, how much I participated. How much I was able to write down.*

> **Husam**: *You can always go back to the conversation, even if you miss the class, you can go online and see what's your classmates talking about.*

In contrast to mentioning the fast pace of online discussion flow which was always associated with the burden of catching up with all the comments that had been made, students still valued the fact that they could retrieve the previous comments made during online discussion by scrolling up and down. Students realized the instructional value of permanent online discussion transcripts and knew how and when to use them for their learning.

> ***Language learning and feedback exchange.*** Several students also responded during their interview that online discussion helped them improve their language skills. Students, as shown from the responses of both Fleurette and Fahim, were very conscious of their own language use, as much as language used by their peers in the form of

spellings, sentence structures, grammaticality of their writings, and vocabulary words and

expressions.

> **Fleurette**: *I think we see how other people write and some people write better than me, so for me to see how I have to write, that gives me the idea. I can see what I am missing. Other people are here one year, but I came here in September. I have been here two months. When I write, I spend a lot of time to write and to read, but it is ok.*

> **Fahim**: *Actually, I feel, let me see…I feel like a normal student, I don't know how this is for you. Like, we have different students, some of them, they don't write fast, but their spellings are always correct, not always, but usually. We have a student trying to type vocabulary, the vocabulary that I did not see before, last time when we talked about illegal immigration, and many students were trying to find vocabulary and the meaning of the vocabulary.*

Fahim was also very cognizant of cultural differences among students and valued

the fact that they could collaboratively share their feedback on linguistic matters, such as

spelling, grammar, and the meanings of particular vocabulary words.

> **Fahim**: *The role like, I see the spelling and grammar. I should start the topic or something. Other things, I see the spelling and grammar, start the topic and give them my idea about the topic. …I don't know how to speak, but the rule is to speak through Skype. Skype helps us read and write in English. Skype is more helpful than any other, so Skype affects us how to type fast and read.*

> Q: *What do you focus on during online discussion?*

> **Adelgunda**: *In my case, what I focus during online discussion is not grammar or spelling, or writing. For me, it's not always the case, grammar or writings…when I begin online discussion, I feel that anytime, sometime I write anything…For me, the grammar and… Grammar, communication with my partners, yeah, that's all.*

This question seemed to be broad but elicited various reactions from interviewees

from different angles. Some interviewees focused on language aspects and others

focused on learning from other students who were from different countries. For some

students, this question proved difficult to comprehend, so I had to provide some detailed

examples of possible situations and answers. I also had to remind them of what they did in the discussion to make connection to their memories and thought process.

> **Satam**: *Face to face is more talking and listening, rather than reading or writing, like in an online discussion, which is the point of the class; to enhance reading and writing skills. And talking and listening comes with the package of reading and writing.*

These answers clearly showed that students realized the affordances of online discussion to improve their language skills. Students realized that their peers typed faster or had better vocabulary knowledge than they did, which was helpful for their language learning and practice. They also mentioned that they were learning how to read and write better, along with acquiring grammar knowledge. Students often associated language learning during online discussion with feedback exchanges with their peers and how helpful these were.

> ***Venue for exchanging feedback.*** While learning language skills, students valued their experiences of receiving corrective feedback from their peers as much as having opportunities to give feedback to others during online discussions. As an example of having positive experiences and valuing feedback, Itsuo mentioned that he felt even ignored when he did not receive any feedback.

> **Itsuo**: *Just follow them. I felt ignored when there was no feedback. Just ask again. try to ask, check clarify again with friends.*

Abdullah also mentioned that when he made spelling mistakes, his peers provided corrections, which he considered as benefits to him.

> **Abdullah**: *On the online discussion, you learn how to write fast and it will improve your typing, spelling and grammar and the class will tell you if you write*

any word wrong. The class will correct you when you write something wrong. When I write something wrong, they fixed it for me.

In Adelgunda's case, who offered corrective feedback to her peers throughout the semester, it was very interesting that she observed other people's spellings very carefully and also purposefully corrected them. She explained that she had a tendency to make these kind of corrective moves. Because students cared more about the amount of writing that they could do during the online discussion, they did not focus much on the accuracy of their spelling of words, she mentioned.

> **Adelgunda**: *When they write, I think I always correct my partners when they are wrong. Even if they can correct me, I always correct them. I think we are in an online discussion, I observed my partners much about their spellings. It's one of the things that I pay attention because this is a writing class. If we are in an online discussion, we must correct each other. It's not something I see in class, but, we don't do. I do in class, if you see our conversation with my partners, they don't do the same, they just want to write even if they are wrong. Because professor says, I am looking, I wanna see how much you guys write, so they just want to write. Ok, this person writes a lot of things than others. It's like competition. I think so.*

Talib described how he felt when he received feedback from his peers and considered these experiences as something beneficial. Also, he stated that while other people were correcting him and he was reading others' comments in the discussion, he received more ideas about what to contribute during the online discussion, which he recognized as placing him in an iterative cycle of error correction, receiving new ideas, and contributing by typing another new comment in the ongoing discussion.

> **Talib**: *They write fast and if I write a wrong word or spelling, they correct it for me directly, that's why I get a lot of benefits from the online discussions…The good thing is that many ideas help me type in keyboard fast. My friends corrected me if I have any grammar problems or spellings. They corrected me always. That's why I like online discussion.*

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The value of feedback exchanges expanded to discourse and content levels. From their responses, students seemed to understand the benefits of exchanging feedback at linguistic and discourse levels as well as for forming their critical thoughts. This active exchange of feedback occurred very naturally from the beginning of the semester and continued throughout the semester

> **Mohammad**: *We begin by normal greets, hi and hello. And then, as soon as everyone greets each other, we start to discuss what we did in class. Everyone states their own opinion, and if anyone else thinks that my words can be better, then, they tell me and it's easier for me to fix it with feedback. In the middle, sometimes we start to discuss vocabulary words. And at the end, we just say bye.*

> **Itsuo**: *We can understand the problem and also care about others' opinion easily, because we can review, we can check others' opinion,…review… when the discussion proceeds, we can come back to the point. We can feedback others' opinion. I wanted to say, review, check feedback.*

Students recognized the value of online discussion as a venue for them to learn from one another, hear others' ideas, share their own views, and determine whether to accept and change their own ideas or not, while negotiating meaning and being engaged in knowledge constructing collaboration.

Simultaneous and equal access to the floor. Students' learning experience in online discussion also had very much to do with their access to the floor. Unlike face-to-face discussion where airspace was given to one student at a time while others waited, online discussion allowed students to share the floor concurrently by having equal access to it. Abdullah mentioned that students could save time during online discussion because they could ask more questions and discuss more ideas, without waiting.

Abdullah: *The similarities, everyone have to ask question and answer. And the differences, on Skype everyone can ask at the same time and type at the same time. But face-to-face you have to wait until each person finished or each student.*

Mohammad: *I think in Skype. Because it takes less time and everyone can give their opinion, while face-to-face conversations, it takes more time…For Skype, everyone has a chance to give their opinion. It's less time consuming, although it allowed students to be distracted more quickly. And face-to-face, it's good because you can debate with other classmates and teachers at the same time, although it is time consuming and not everyone gets a chance to speak up.*

From the moment when they obtained shared access to the floor and transmitted their comments to the online discussion, students had numerous chances to exchange their own answers and ideas, and to provide the most influential and strongest voice to organize the discussion flow. Mohammad mentioned that once they all had access the floor, they had a chance to debate one another and see what others said about their opinions. This was also effective, according to Mohammad, due to some rapport built among students. While reading his peers' opinions and the evidence they offered, Mohammad felt that his peers' presence in the online discussion was more tangible than debating about something randomly.

Mohammad: *Everyone has a chance to speak. We can debate with one another. We can see other people's opinions. We can see their evidence. It takes less time than face-to-face…I think having the name of the person, when he writes something, it appears. So, it's easier to debate with other person, with person you know, other than randomly debating about something you don't agree.*

On the other hand, students reported that this equal access to the floor sometimes caused information overload, which as a result made them unable to follow all the topics that were being discussed.

Itsuo: *It's easy, no, difficult for me to catch up discussion and answer opinion critically. Critically. Because we have to check others', more than around 10,*

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several friends' opinion at the same time. Give up...hahaha. Just try to answer what I can. Yes, it's a strategy. I should talk to one person. Ask them. Ask friends to discuss step by step. Ask them to focus one topic at the same time.

This was more true when different ideas were bumping against one another, and one had to process these various perspectives in the midst of a fast and ongoing discussion to determine whether what others were saying agreed with one's initial thinking.

> **Itsuo**: *Basically, face-to-face discussions, both of them have good and bad points. A good point of face-to-face is that we can catch up with proceeding easily because students can speak one by one. However, PC, Skype, can type, everyone can type at the same time. So, sometimes student outlook someone's ideas and opinions. Overlook. This seems to be advantage and also can be disadvantages. Depending on perspectives and points of view.*

This constant negotiation of meaning in students' mind occurred as everyone was offering his or her own points of view by typing. As students' logic of their thinking was presented in a quick and somewhat disarranged ways, students seemed to struggle to determine whether to follow their peers' ideas or still hold on to their initial opinion and try to present it. In Talib's case, his delayed responses caused other people to laugh, which made him realize that his peers thought and presented their ideas faster than he did.

> **Talib**: *...and bad thing is a lot of minds talk at the same time without knowing what's the difference between those minds...There is a balance between minds, because you have a lot of students and everyone of them has his own mind and his own...I don't know how to say that. But in general, they are not like each other.*
>
> *Their mind, not in the same way, because there are a lot of difference between our minds. And the difficult thing in online discussion is a lot of my friends in my class, I think they have a good mind that let them think faster than me, think faster than my mind. That's why, I have a problem to follow them, because I started following one idea and thinking solution to this problem.*

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When I typed, I saw that they are, they passed what I think about it. When I wrote it, I hated that some of them laughed it. I wrote something late, some points they talked about it before, my mind just give me the idea and I find and I saw that all of my friends… I can't follow it. I think they are smarter than me.

Each participant reported a clear distinction between face-to-face and online discussion, in terms of how they viewed them as learning contexts, as well as tasks that they had to complete during the activities. Most interviewees understood different affordances provided in the online environment and individual writing contexts and reported that they were able to adjust themselves to the environment. During this negotiation process, they were able to contribute more to the knowledge co-construction process shared by other classmates. They also realized that language used during online discussion was more casual, with use of different types of spellings and emoticons. Some students felt that this orthographic alteration enriched the way they communicated with others, while others mentioned that it was somewhat distracting.

Collaborative knowledge construction. Because many online discussion tasks were to solve practice problems together or share ideas on topics, I was able to elicit rich responses about students' experience of collaborative problem solving during online discussion and how effective they saw these experiences. During collaborative problem solving and topical content knowledge exchange, students learned from one another. Satam, as shown in his answer below, mentioned that discussing topics through online discussion was more productive because the whole class was engaged in the same topic at the same time, and when someone did not understand a point, others could help him or her.

Satam: *I always think that it is a lot easier and more productive to collaborate with classmates during online discussions, rather than doing it individually. It's more productive, more effective, because the whole class is going through it, when somebody does not understand it, then people can help him understand. So, by the end of the class, the whole class understands the topic as the group effort.*

Moreover, Adelgunda also mentioned that when she wrote individual writings, her focus was solely on writing her own work, whereas, during online discussion, there was more room for negotiation of meaning regarding discussion topics or reading materials, resourcing from their peers' prior knowledge about the topic, instead of searching online resources or library materials, as exemplified below.

Adelgunda: *They differ in…my individual writing is when I express my own idea, like, if I am in the writing, I am writing in online discussion, when we discuss, we resource the materials, we share opinions. I can agree with the person that I am working with. It depends, if you ask us to write an essay, or research paper, we have to go to Google or the library. If I am in an online discussion, I learn a lot from my partners.*

Students mentioned as one of advantages of online discussion the contrast between struggling on their own, without anybody to help them, and being in a group, where others could help find answers for a question. Another advantage was that they gradually learned to embrace others' perspectives, even when they disagreed about certain ideas initially, accepting the fact that there could be more than one answer or view to a question, which also in the end opened their minds.

Abdullah: *It's totally different because…it's better than writing. Typing is better than writing. With other people, they can help me and give me more information about the topic. By myself I have search the Internet what I need. With other people, they can tell me what I need. It's hard by myself…Like what I write? Ask questions and answer the questions and give more information if someone need. Other people do the same. They ask and answer…We agree all together to solve the problem. If there is someone disagrees, we have to discuss why he disagree.*

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Issues affecting the evolution of class discussions and activities. The fourth theme described several issues that influenced class activities, including face-to-face and online discussions, as well as timed writings.

Topic familiarity affected participation and learning outcomes. Findings from interviews showed that how familiar students were with the discussion topic determined how much benefit they gained from each discussion. Because of the time pressure and fast pace of online discussion, students revealed more resistance to the discussion when they did not know what to talk about. However, the interviews also showed that students built up their skills to accommodate themselves to the online discussion flow by both listening to others and devising their own ideas to participate in the discussions.

> Q 6: *How was your experience of collaborative problem solving during online discussion?*
>
> **Adelgunda**: *Well, it depends on the topic. Sometimes, I am familiar with the topic, and the other time, I write less than other times. It depends on the topic. I think it happens with everybody.*
>
> **Fleurette**: *To have a topic that I do not know, I am not comfortable with that. Today, if I have to speak about the country that I don't know, I am not comfortable with that. I do not know what to write.*

Answers from these students emphasized that they cared how familiar they were with the topic as it affected their attitudes and how much they could get out of the discussion. This also made me realize that they needed more structure to build up their skills and a variety of ways to use online discussion for their learning.

In case of the timed writing, students' answers showed that their knowledge and familiarity with the topics influenced greatly the number of words they could write within

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a given time limit. However, even in the case of a topic influencing their timed writings,

time constraints played an important factor in the overall quality of their writing pieces,

such as grammaticality and organization.

> **Adelgunda**: *As I said before, it depends on the topic; if I am familiar with the topic. If I am not familiar with the topic, it might take me long to write. There is like two different points: First, I can write in 20 minutes like 300 words, just writing, not looking at the content, even the grammar or organizing the essay.*

> **Edgar***: It's the topic. Because I have to wait 3-5 minutes just to brainstorm. And then start to writing.*

Students' preference for familiar topics was very much related to their confidence

in the quality of their writings. Adelgunda addressed that she cared more for the quality,

even when he knew a lot about the topic, and as a result he could write longer pieces of

writing. Talib stressed the fact that he internally felt a lack of education when he was not

able to make his points with confidence. Had he known about the issue, he could have

proposed his ideas with more confidence so that others would be more convinced.

> **Satam**: *It depends on the objective of the timed writing; if it is to write a lot rather than the quality of the timed writing. Like I can write a full 5 paragraphs in 20 minutes, but I think quality is better than quantity.*

> **Talib**: *When I know a lot of information about the issue we are talking about. If I cover a lot of things, I should have confidence. Without confidence, people will not listen, will not respond. If I just see the title, name, that can't make me confident about this issue, because I still do not have a lot of education or information about this issue.*

Not only did how familiar they were with the topic affect their participation in

class activities, their interest in the discussion topic influenced their engagement during

online discussion. Adelgunda pointed out that the discussion seemed to be somewhat

disjointed when they did not know how to discuss or were not interested in the topic.

Adelgunda: *The difficult part was when not every student knows how to discuss the topic. When they are not interested in the topic. I stop writing and I start thinking before I write. I elaborate my ideas to find a way to help them understand the topic.*

As a solution to Adelgunda's case, Fahim mentioned that when he did not know about a topic, he just focused on some other topic that seemed interesting to him. If no topic seemed to be picked up by many students in the discussion, Fahim said he usually projected his idea and started talking about the topic. For both timed writing and online discussion, students' familiarity with topics determined their participation and engagement in the activities, which as a result defined their learning experience and outcome.

> **Discussion leader role affecting discussion outcome.** In every online discussion, students seemed voluntarily to take turns playing the role of leader of the discussion. Sometimes students pointed to one student to become the leader that day, although the role remained somewhat managerial most of the time. Students' familiarity with a topic as well as their interest in the discussion topic was also very much affected by what kinds of roles the discussion leader played during the day's discussion. Satam mentioned that he had control over the discussion topic while moving the discussion according to his own way, when he was the discussion leader.

Satam: *It feels good to be controlling of your topic because I can turn the discussion my way, if I were the leader… Sometimes I think the group leader should recognize his/her responsibility as a group leader to guide the topic, to direct the discussion. Sometimes some leaders are better than other leaders, so it makes it easier to comprehend, if the group leader's thought and questions are organized well. You know, sometimes, we don't even know who is a group leader.*

However, he realized the responsibility of the discussion leader in helping other students organize their questions and thoughts, while helping the discussion move forward. He even mentioned in what area he would do better next time, such as understanding materials thoroughly and preparing for the discussion ahead of time.

Edgar: *Discussion leader, we just have to come with the several questions and ask to the audience.*

In Edgar's case, he considered the role as something managerial, asking questions of participants as necessary. Adelgunda also made some evaluative comments about her role as a discussion leader because students were sometimes less cooperative.

Satam: *I will be better organized and I have to understand the material much more thoroughly than the class due to my responsibility as the group leader.*

Adelgunda: *My role as an online discussion leader was good, but at the same time, bad. Because it's really hard to, how can I say… it's really hard to deal or to labor with students. Students that try to mess up your work as a leader.*

From Husam and Itsuo's responses, I could see that they were well aware of expectations of the role of a discussion leader, while also emphasizing their own criteria or roles they valued for online discussion.

Husam: *I believe that my role as an online discussion leader is important to give my classmates the opportunity to express their opinion, as much as listening and appreciating others as well. And one of the skills that a leader should have in my point of view is how to keep the conversation going by asking questions that are related to the topic that seem interesting to the people participating in the online discussion. For me, for example, I prefer not to write a lot when I am leading the discussion, as much as typing questions so my classmates can discuss.*

Husam, Adelgunda, and Itsuo stressed that the roles expected from a discussion leader were characterized as managerial, instructional, and organizational roles, motivating other students, and keeping everyone on track.

Adelgunda: *Online discussion, I was like a professor. I had an experience as a professor. I had to organize the discussion. But it was very hard. It was really hard to push students to the topic and to be into the topic.*

Itsuo: *Discussion leader should be listening to others' opinion. Should listen. Should listen others' opinion. Therefore, leader shouldn't focusing on discussion. Shouldn't focusing on making opinions…The meaning is discussion leader should have focused on discussion management rather than focusing on making opinions. Especially, our English class, I believe. If someone become a discussion leader, appointed discussion leader, he or she must be feeling out of control, because of classmates are naughty kids. I feel uncontrolled. I donno.*

All these answers showed me that students were very well aware of the role of discussion leader and cared much about whether the leader played the role well. They also were evaluating how other classmates performed as discussion leaders. This showed that to assign students as discussion leaders was a good idea and gave each student a different experience during online discussions.

Peer influence in learning. The interview revealed that students had various reactions to others' communication behaviors and attitudes. Each participant shared his or her perspectives on peers' online writing behaviors, especially as it pertained to the learning experiences.

Adelgunda: *To be honest, my experience was good. That was my case. But I observed my partners, they just, they don't take things seriously, because they just play all the time in class. I don't expect it before. And they don't learn much from this because of their behavior. The only online discussion that I really loved was the last one –Wednesday one. Because everybody was attention. Even if some students didn't read the articles, we solved it. We got it.*

When we first started this semester, was new project. I've never did it before. It was a really good experience. But, the only thing that I did not like much was my partners' behavior. They just want to play instead of discuss topics. We'll help them in the future or now. Now, it's good. They are improving their behaviors. They are taking the things seriously. That's all.

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Adelgunda particularly thought that at the beginning of the semester, some students, instead of writing in English, were writing in their native language, which was not helpful for them. She also acknowledged that they were international students, they had to practice English during the discussion and resisted others who did not show a serious attitude toward the class.

These answers showed that some students were not happy with other students who seemed joke too much during online discussion. They expressed their feelings and reactions about others' online discussion behavior as it related to their own learning. This part of the data showed very well how much each student cared about the online discussion environment as it was affected by each member who contributed during discussion. Answers from both students above showed that they did not like students who did not take learning from class seriously, and they wished that these students had been more helpful to their learning.

In general, students addressed that others' joking while discussing was one of the negative things they saw about the online discussion, which had nothing to do with the exercise itself.

L1 influence and **communication barriers.** During online discussion, it was very common that students typed words or phrases in their first language. For students who were from Saudi Arabia or whose first language was Arabic, it was even very new for them to be writing from left to right. Therefore, for these students, their first language system, not merely at the linguistic level, but also in terms of overall norms, influenced their participation in online discussion, carried over into English.

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Talib: *We are starting from right to left, but here left to right. I think that's a big difference. With other people,… with myself, just my mind will think for me. But with other people, a lot of mind, a lot of ideas, and a lot of experiences, and also big differences between I and group people.*

In Adelgunda's case, as shown below, her peers' first language use was what she did not want to see or hear because it hindered everyone from practicing English. However, she also understood that because of their language barriers, students did not fully act upon the teacher's instruction and were not able to comprehend questions.

Adelgunda: *…In the beginning of the semester, I notice that some students, instead of writing in English, they used to write in their language. That's not helpful for us. We are international students, that is not helpful for us once we are international students. Typing is about the same.*

The difficult part is we were all international people, sometimes we cannot understand what the teacher wants us to discuss. Sometimes our teacher, hard comprehend questions.

One important thing that I discovered was that even though they were taking a college level composition class, not an ESL course, their language level was still affecting how much they could comprehend my instruction. In addition to their first language influence, their current level of English also influenced their participation in online discussion.

Preference for discussion medium. The fifth theme organizes ideas about why students preferred a particular discussion medium over the other.

Individual inclination for the discussion mode. Participants showed diverse attitudes about their preference for the discussion medium, revealing how effective the discussion tools were for their writing development and knowledge sharing. Using

technology was also reported as a burden to Itsuo because reading from the computer

screen was not easy for him.

> **Itsuo**: *No. I don't like to see screen. I really hate seeing computer screen. I feel so tired. I have to see, everyday I have to see a lot of PC screen, so my eyes are so tired, so I don't want to see PC screen in the class. Nevertheless, we always see it. I always see it. So, actually I bought a glass, so I wear glasses whenever I used PC, which can reduce strain.*

From Itsuo's response, I saw that students' preference for face-to-face or online

discussion was affected by their burden to manage reading from the screen and language

issues during online discussion. By contrast, Adelgunda thought that the face-to-face

environment created more seriousness in students' attitudes because it brought in fewer

distractions.

> **Itsuo**: *In Skype discussion, I can't say exactly what I want to say either. Writing is difficult. Grammar is difficult, sentence structure is difficult. English is difficulty. I want to be native. I don't know how to write more casual. I only know how to write sentence. I learned you should write down your sentence more correctly, so I think…I forgot…*

> **Adelgunda**: *The advantage of face-to-face, to discuss face-to-face is better, because people get serious, because they get more serious. They don't play, or don't go to Facebook, or do something that distracts them. But face-to-face people are true to the topic, we are not distracted by something else, like Facebook, or other things that distract us; we just focus on the topic we are talking about. We don't take too long to answer all, or disagree with each other.*

These answers showed how the students liked or did not like certain aspects of

both face-to-face and online discussion. And yet, Fleurette addressed the two discussion

environments without showing a particular preference for either of them, from a

somewhat neutral standpoint.

> **Fleurette**: *I think both of them are important. I think both of them are important. I don't prefer either Skype or face-to-face. It's different and both are necessary.*

With Skype, we have time to reflect, to think about a little but more about what we want to say. In face-to-face, sometimes we go out of topic too quickly, some guys who speak Arabic go outside and drink and we go outside of the topic. With Skype, other people can help up, for example, I speak the topic and another people think the same and she can share the ideas. Sometime face-to-face, people are shy and they don't want to say anything. I think it's easier for people to write.

Students' individual preferences were woven into their perceptions of each discussion medium.

Affective reactions to the discussion medium. Students' participation was determined by affective factors that they managed throughout the online discussions. From their language anxiety to time pressure inducing various emotional reactions, students explained various reactions toward the online discussion medium. Other students expressed that they wanted to be more confident in their answers and comments.

Fleurette: *I think, more in Skype. I contribute more in Skype. I am more comfortable now to write. Maybe I am not comfortable to speak with other people, probably because of my pronunciation. I am comfortable when I write.*

Edgar also thought that when people are shy in face-to-face discussion, online discussion would allow them to share and transmit easily their ideas to others.

Edgar: *I like it because everybody writes, everybody comes with ideas. A lot of people that are shy can write, instead of talk face-to-face.*

Husam: *I believe that another challenge could be the students being shy, or the fear that his answer could be wrong. And that way, his classmates look at him as less smart student, which is a wrong statement or my point of view. We all learn from our mistakes….So, as I mentioned, the advantages of online discussion is the students are confident to type fast and express their ideas because they don't have to face the other students while talking to them.*

Mohammad: *I feel comfortable with it and it's helpful because I can see what other people feel about the question. And it's easier to understand others and learn more about the class because I am learning from you and the rest of the students.*

Students also mentioned that environmental factors, such as whether the room was quiet or not, and whether there was any kind of distraction, affected the way they wrote. Some students sometimes became angry and stopped writing, or were distracted by what was happening outside the classroom, which created various emotional reactions.

Visibility of prosodic features and gestures. It is often noted that online discussion lacks some features, such as prosodic cues and gestures, compared to face-to-face discussions. Students in these interviews reported that if they had been able to see and talk with each other face-to-face, they might have communicated better, compared to online discussions. However, some also realized the potentials and benefits of online discussion as a learning tool at the same time.

> **Itsuo**: *Similarity is we can communicate, change and share our ideas. On the other hand, differentiation is whether we can feel friend's expression. Just writing, we cannot feel their expression. We have to guess. Their feelings. That's difference.*

Although intercultural differences clearly exist in gestures, haptics, and prosodic features, students seemed to rely on expressions of basic feelings shared across cultures, as they were contributing to their understanding of comments shared by their peers who were from various countries and cultural backgrounds.

> **Talib**: *Face-to-face. because face-to-face is easy to share what's in your mind, even if you talk like incorrect way. Because if you say something incorrect, your body language will help others understand Face-to-face, that means even if I say something incorrect, the audience will understand me… But online discussion, if it's just write without seeing face-to-face, it's difficult for me in the first. But, I am improving.*

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Students mentioned that they would contribute more in face-to-face discussion and felt more engaged in what other classmates were talking about, being able to understand their point of view, by the gestures or by the facial expressions they were making.

> **Edgar**: *There are some people prefer speaking face-to-face, because we can see what the people are saying than online discussion. Because we can sometimes lie and cheat online. Similarity is that we will get a point in both ways, the content of what we are discussing. The difference is that face-to-face, we can see like what people are thinking more than online discussion…I prefer face-to-face in class because I can see the impact of what people are saying. Skyping, I can see that people just write and sometimes they make fun and that's it. Also, Skype get people lazy.*

Although students had a tendency to favor visible aspects of face-to-face discussion, I felt their responses had much to do with their lack of experience in online discussion. Had they experienced enough online discussion and thus become more familiar with it, along with their typing and language skills, their preferences might have differed, more dependent on individual learning differences rather than the medium.

In sum, results drawn from the grounded theory approach I took revealed various themes regarding online discussion and timed writings as part of students' experiences in an academic writing class with a major online component. Themes that emerged from analysis of interview data included differences between face-to-face and online discussions, perceived usage, the importance of topic familiarity, writing procedure, collaboration experience, peer influence, and perceived improvement over the semester.

Survey Data

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At the end of the semester, the treatment students completed a survey that contained questions regarding their demographic information and perceptions of classroom activities, using 7-point Likert scales, multiple choice format, and open-ended questions (see Appendix D). The survey consisted of 4 domains of student perceptions: (a) language learning, (b) motivation and affect, (c) technology use, and (d) general questions. In what follows, I report on my analysis of the Likert scaled answers, followed by a brief summary of open-ended answers, followed by some corresponding interview data. Appendix D provides descriptive statistics.

Positive language learning experience. For the section that asked about students' language learning experience, a total of 21 questions were asked, and students reported relatively high satisfaction, with an average rating of 5.9 out of 7. The lowest score reported was for #8, which asked, "It takes more time to read and comprehend postings of students from other ethnic background" ($M = 4.2$, $SD = 2.35$). Among questions that received higher scores are: #16, "I understand spoken English reasonably well" ($M = 6.33$, $SD = 1.41$); # 20, "Tasks during online discussion were appropriate for my writing skill development" ($M = 6.3$, $SD = 1.34$); #4; "I learned more English skills in this class where I can participate in both oral and written discussions" ($M = 6$, $SD = 1.33$); #7: "Online discussion contributed greatly to my knowledge of English grammar and vocabulary" ($M = 6.2$, $SD = 1.32$); and #6, which asked, "I learned a lot from composing comments or blog entries to post in online discussion forums."

Interestingly, however, students gave high ratings to #15, on average ($M = 6$, $SD = 1.49$), which asked, "I can express my thought satisfactorily in written compositions in

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English." This result was contrary to what most students reported during their interview session, in which they mentioned that writing in English was one of the challenging tasks, and they always took extra care to write more accurately.

Increased motivation and lowered affective filters. For the motivational and affective aspects surveyed, a total of 26 questions were asked, and students' satisfaction rate was also high, with an average rating of 5.7 out of 7. Students reported significantly higher rates of agreement to the question, "Online chat is an interesting activity which motivates me to learn more in class" ($M = 6.2, SD = 1.32$), and "It would be fun to take another ESL course that has an online discussion component" ($M = 6.4, SD = 1.26$). Most students acknowledged their agreement for #10, "My engagement is different between online and oral discussions" ($M = 5.9, SD = 1.54$).

Students showed the strongest disagreement to #28, "I don't like re-writing my compositions," which showed that they were willing to revise and rewrite their writings. However, a strong agreement on average was reported for #2 "online discussion helps me to be more engaged in the content of the class than a regular English class would have" ($M = 6.1, SD = 1.45$). Overall, students were motivated to participate in class activities, including online discussion and timed writing.

Students reported a high mean agreement rate ($M = 6.3, SD = 1.32$) to question #12, which said, "I usually feel relaxed and confident when active participation takes place in class" ($M = 6.3, SD = 1.25$), as well as to #25, "I felt it was very easy to participate in online discussion." These responses also seemed contrary to what most people reported during the interview session which took place in the middle of the

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semester. The discrepancy between answers from these two sources may be due to the fact that the survey took place at the end of the semester, after students had participated in online discussion twice per week for thirteen weeks, which made them gradually feel more comfortable in the online discussion environment.

Convenient access to computers. In terms of technology use, a total of 14 questions were asked. Students' satisfaction rate averaged 6.1 out of 7. After experiencing online discussion for a semester, students felt that "Skype discussion features suited online discussion agenda" ($M = 6.4$, $SD = .97$), and because the class met in the computer lab, they felt that their access to the computer was adequate ($M = 6.4$, $SD = .97$), and they "liked Skype group discussion features" ($M = 6.2$, $SD = 1.64$). They also reported that "features of online discussion tool are user-friendly" ($M = 6.4$, $SD = 1.33$) and "the layout of online discussion board is engaging and easy to understand" ($M = 6.2$, $SD = 1.62$).

Positive perceptions and experiences. Finally, for general questions in the last section, which comprised 20 questions, students also showed high agreement, with a mean of 6.14 out of 7.   Overall, students had a positive experience in online discussion, as shown through #1, "I have a positive experience in the online discussion activities in this class" ($M = 6.4$, $SD = 1.26$); #6, "I understood my instructor's intention or purpose for the online discussion activities." ($M = 6.5$, $SD = .97$); #9, "I appreciated the degree to which the teacher participated in online discussion" ($M = 6.2$, $SD = 1.03$). These three answers corresponded to interview answers that students provided, with some possibility that their perceptions had changed over the semester.

Most students reported overall positive experiences, as shown in #14, "Online discussion was an interesting activity that motivated me to learn more and participate more in class" ($M = 6.5$, $SD = 1.27$), and #15 "Online discussion helped me to be more engaged in the content of the class than a class without online discussions would have" ($M = 6.5$, $SD = .97$).

From open-ended answers, students mentioned both positive and negative aspects of online discussion. As for positive, students mentioned that "different topics and also I had the opportunity to share my opinions" and "there were many positive features that we used on the online discussion such as group chat, video call and instant text messaging." One student wrote that the atmosphere in online discussion was comfortable, by answering, "be more confortable with usual expression." Regarding access to the floor, another student reported, "everyone can share their own opinion, it takes less time that discussing by speaking, and it benefited me by helping me write better," and thus the online discussion activities "help u type more and it improve your typing and your English" and as a result, "improve the writing."

As for negative features or features that students felt could have been improved, most answers were about technical aspects. Because the *Skype* program was not permanently installed on each computer, students felt that the process of installing the program every time was tedious, mentioning, "all computers have to already have a SKYPE program to let us login fast not like now that each time we need to download it and it takes long time. The computers are very slow inside the classroom in comparison to the computers out in the hallway." Abdullah expressed his concern about potential

technological problems when using computers, such as an unexpected power failure, etc.

The occasional delay caused by installing the *Skype* software program every time, as a result, produced in students extra concerns in being able to make a smooth entrance into the discussion on time when all others had, and to follow through seamlessly, because they were already having to catch up in the discussion flow.

Even though students did not understand fully the benefits of online discussions at the beginning of the semester and initially considered it as something that they thought was more for casual conversation or fun with family and friends, they came to realize the value of the online discussion, especially when it was tied to the course objectives of the writing class. None of the students in this class had ever participated in online discussion as a class activity organized around their learning.

> **Satam**: *#1, it is a modern concept, fresh, new, and I haven't seen it used in other universities yet. #2, I think that Skype should be used for any English class, because it helps the students understand in less time. #3, students practice reading and writing on a day to day basis. #4, writing socially is a lot different and more interesting than writing in an essay form and that's why I think that students can comprehend more on online discussions.*

As to timed writing, Husam realized its utility value, as it was very similar to the writing exam section of one of the standardized English exams for speakers of other languages and also helped him form creative thinking and argument.

> **Husam**: *In my point of view, timed writing is one of the most important skills that international student should have. Because it helps students to think so fast or quickly about the arguments or about the points he/she is going to talk about in a short period of time. And this skill will help the students to do better in TOEFL, SAT, or any other exam that requires writing essays in a specific period time. I think timed writing makes you think about the issue quickly even if you don't support the issue, you must find points to talk about, support your opinion.*

Satam: *My quality in writing has improved, because now I know that timed writing is great practice to enhance rhetoric and composition skills, especially for international students who speak English as a second language.*

In general, survey results showed a change in students' perceptions over the semester, as well as a generally positive feeling about the learning experience in online discussion. There were some discrepancies between answers provided from survey and interview responses, perhaps due to the time when each data source was collected. Interviews took place during the first and second month of the semester, and the survey data were collected on the last day of the semester. Data from these two sources reflected that over the semester, students' perceptions and learning experiences had changed, mostly in a positive direction.

Research Question 3

In addition to the online discussions, the students were asked once per week to write a timed essay immediately following the online discussion. Research question 3 asked whether students showed improvement in these timed writings across the semester. To evaluate the students' timed writings and to account for the occasional absence among the students, I collapsed the twelve weeks of the semester into three time periods, beginning, middle, and ending, with four weeks making up each period. I developed a writing rubric with seven categories (see Table 5) based on writing assessment rubrics commonly used in composition courses and published by other rhetoric experts, and I used this rubric to grade each timed writing, with seven categories: thesis and evidence, organization, format, sentence fluency, sense of audience, word choice, and conventions. For each student, I then calculated mean scores for each criterion by averaging across the

four weeks at the beginning, middle, and end of the semester. These dependent scores were then submitted to several one-way repeated measures MANOVA analyses to measure participants' improvement over the semester.

Interrater Reliability

I used two kinds of approach to measure the extent to which both graders agreed: As the first step, I took the mean scores across the rubrics and entered them into a correlation analysis. Pearson's correlation of the average score showed a strong correlation between her grading and mine, for timed writings, $r = .86$, $p < .01$ and for essays, $r = .78$, $p < .01$. For the seven rubric categories of timed writings, I obtained the following correlation scores:

Table 7
Interrater Reliability Check for Timed Writings

	Correlation	p-value
Thesis	.485*	.007
Organization	.674*	.000
Format	.417*	.022
Sentence Fluency	.614*	.000
Word Choice	.644*	.000
Audience	.712*	.000
Conventions	.611*	.000
Average	.863*	.000

Pearson's R between raters for timed writings (*$p < .05$)

For essays, to measure the correlation between graders for each of seven categories, I ran Spearman's rho correlations due to the small sample sizes, instead of Pearson's r. This was also because Pearson's r requires normally distributed data, and for small data sets (n < 30), Spearman's rho is recommended. Table 8, I report Spearman's rho results.

Table 8

Interrater Reliability Check for Essays

Categories	Correlation	p-value
Thesis	.473	.120
Organization	.695*	.012
Format	.908*	.000
Sentence Fluency	-.217	.499
Word Choice	.205	.522
Sense of Audience	.251	.431
Conventions	.689*	.013

Spearman's Rho between raters for essays (*$p < .05$)

As the second step, I then calculated percentage agreement, due to the fact that not all Pearson's r and Spearman's rho scores were very high, mainly due to a small sample size. In terms of each rubric category, I used the percentage agreement to calculate how often grades matched exactly or within 1 point on the scale.

In terms of the timed writings, for thesis, 15 essays (50%) fell within the range of 0-1 point difference on the 5-point scale and the other 15 (50%) within 1.5-2 points difference. For organization, one essay (3.3 %) showed a 1.5-point difference, whereas 29 essays (97%) fell within a 0-1 difference. For format, 27 essays (90%) showed less than 1-point difference and three essays (10 %) showed more than a 1.5 difference. For sentence fluency and word choice, 29 essays showed a difference that was within 1 point, and only one essay showed a difference of 1.5 points. For audience, all essays (100%) showed a difference of no more than 1 point. For conventions, 28 essays did not show a difference of more than 1 point, and two essays fell within a 1.5-2 point difference.

For essays, the thesis category showed that all scores (12 essays) fell within the range of 1 point or less difference, with 58% (7 essays) in 0 to 0.5 difference, and 42% (5 essays) showing 1-point difference. For organization, 10 out of 12 essays fell within the

range of a 0-0.5 difference, one essay showed a 1-point difference (8%), and one essay (8%) showed a 1.5-point difference. In terms of format, 11 essays (92%) showed a 0-0.5 point difference, whereas one essay (8%) showed 1-point difference. For sentence fluency, word choice, and conventions, all 12 essays (100%) fell within the range of a 0-0.5 difference. For audience, there was a 0-0.5 difference in 10 essays (83%) and 1-point difference in two essays (17%). Overall, in terms of percentage agreement for essays, only organization for one essay showed a 1.5 difference, and all the rest either exactly matched or were within a 1-point difference.

Improvement in Timed Writing Across the Semester

As shown in Table 1, the number of words produced in the timed writings from TW1 to TW12 was counted for each participant. Means increased from 85.4 for the first timed writing to 108.4 for the last one (see Table 9).

Table 9
Mean Number of Words Produced in Each Timed Writing

TWs	1	2	3	4	5	6
Mean	85.4	88.8	96.3	91.3	108.8	84.3
TWs	7	8	9	10	11	12
Mean	111.6	126.3	131.5	152	106.6	108.4

Due to the low sample size, 12 or fewer timed writings for 10 participants, and the relatively large number of dependent variables, I grouped the seven rubric categories into three groupings: (a) thesis and organization, (b) format and convention, and (c) sentence fluency, word choice, and sense of audience. Three repeated measure MANOVAs were conducted for each of these three categories of scores across the three time periods.

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As shown in Table 9, the mean scores on all seven categories across the three time periods increased. For the three groupings of the rubrics, the MANOVA results all indicated significant differences across time. Between Period 1 and Period 3, two categories, format (from 2.9 to 4.0), and word choice (from 3.1 to 4.2) improved significantly with more than 1 point of increase in the mean score. Then, the other two categories, sentence fluency (3.2 to 4.2) and organization (from 2.9 to 3.9), showed almost as much improvement as the first two, with 1 point increase. The other two categories, conventions (from 3.0 to 3.8) and sense of audience (from 3.1 to 3.9) showed a 0.8 increase in mean scores. Thesis showed 0.5 improvement (from 2.9 to 3.6) in the mean scores. For all seven categories, there was no decrease between Period 1 and Period 2.

Table 10
Means (s.d.) for Each Rubric Component Applied to Timed Writings for Beginning, Middle, and Ending Periods of the Semester

Measure	Period 1	Period 2	Period 3	Contrasts[1]	
				Period 1 vs 2	*Period 2 vs 3*
Thesis	2.9 (0.4)	3.3 (0.6)	3.6 (0.4)	$F = 6.1, p < .05$	n.s.
Organization	2.9 (0.5)	3.3 (0.4)	3.9 (0.4)	$F = 6.1, p < .05$	$F = 34.7, p < .001$
			MANOVA results: Wilks Lambda, $F (4, 6) = 33.8, p = .001$.		
Format	2.9 (0.8)	3.3 (0.3)	4.0 (0.3)	n.s.	$F = 59.1, p < .001$
Conventions	3.0 (0.7)	3.1 (0.4)	3.8 (0.4)	n.s.	$F = 42.2, p < .001$
			MANOVA results: Wilks Lambda, $F (4, 6) = 15.8, p = .01$.		

Table 10 continued.

Sentence Fluency	3.2 (0.5)	3.6 (0.5)	4.2 (0.3)	$F = 7.7, p < .05$	$F = 20.5, p < .01$
Word Choice	3.1 (0.4)	3.4 (0.4)	4.2 (0.3)	n.s.	$F = 27.1, p < .01$
Sense of Audience	3.1 (0.3)	3.4 (0.3)	3.9 (0.3)	$F = 7.6, p < .05$	$F = 20.4, p < .01$

MANOVA results: Wilks Lambda, F(4, 6) = 18.9, p = .01.

Note. Each period of the semester represented the mean of four weeks of timed writings. Degrees of freedom for all contrast F values were 1, 9.

Separate ANOVAs to compare Period 1 to Period 2 to Period 3 showed that for three of the rubric components (organization, sentence fluency, and sense of audience), there were significant increases with each advancing period. For three of the rubric components (format, conventions, and word choice), there was no significant difference between Period 1 and 2, but a significant increase from Period 2 to Period 3. For one component (thesis), the improvement came between Period 1 and 2 and not between 2 and 3. These results indicated that students' timed writing improved across the time periods of the semester.

Timed Writings from Both Treatment and Control Groups

To account for the concern as to whether online discussion was the only contributing factor to treatment students' timed writing score improvement, and also whether timed writing was also conducted by the control students and thus their reduced improvement in essays (to be explained later) was not solely due to their lack of experience and practice, I chose timed writings from both groups which took place on October 10. I used SPSS program and conducted three repeated MANOVAs in the same

manner for the first analysis. As shown in Table 11, in terms of the mean scores,

treatment students outperformed control students on October 10's timed writing about 0.7

on average. Among all other seven rubric categories, organization showed the most

difference between treatment and control sections (1.1), then format (0.9) and

conventions (0.7), followed by sentence fluency and sense of audience (both 0.6) and

thesis and word choice (both 0.4).

Table 11
Means (s.d.) for Each Rubric Component Applied to Timed Writing on October 10

Measure	Treatment Group	Control Group
Thesis	3.1 (0.5)	2.7 (0.8)
Organization	3.4 (0.4)	2.3 (0.5)
MANOVA Results: Wilks Lambda, F (2, 16) = 365.0, p = .000.		
Format	3.4 (0.5)	2.5 (0.4)
Conventions	3.2 (0.4)	2.5 (0.5)
MANOVA Results: Wilks Lambda, F (2, 16) = 622.7, p = .000.		
Sentence Fluency	4.0 (0.4)	3.4 (0.3)
Word Choice	3.5 (0.4)	3.1 (0.5)
Sense of Audience	3.6 (0.5)	3.0 (0.4)
MANOVA Results: Wilks Lambda, F (3, 15) = 675.8, p = .005.		

Note. Degrees of freedom for all contrast F values were 1, 17.

Although there are other reasons that surely contributed to the overall

improvement of students' timed writing scores, the interactive online environment may

have been an important contributor because the participants were forced to attend to the

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flow of the conversation at a language and content level, and to remember what had been said and how it was expressed across several lines of text, thereby perhaps contributing to their language development.

Research Question 4

Essays from Both Treatment and Control Groups

The fourth research questions stated: How does the writing of students enrolled in a class that incorporates frequent online discussions compare to the writing of students in a control section? To compare the students' essays in both treatment and control groups over the semester, I conducted the analysis in the same way that I did for timed writings. One difference was that there were only two time periods, instead of three. The first informative essay took place at the beginning of the semester and served as a pretest, and the final controlled research paper took place at the end of the semester as a posttest. To account for some missing submissions, I chose nine and ten participants from each section who completed these essay assignments and eliminated those students' essays that were only partial or entirely missing. Thus, a total of 19 essay scores were analyzed, nine essays out of ten from the treatment section and ten essays out of 12 from the control section ($N = 19$).

Using the same writing rubric as for timed writing with its seven categories, I graded each essay. In the same way that I combined for timed writings, I grouped these seven categories into three groups: (a) thesis and organization, (b) format and convention, and (c) sentence fluency, word choice, and sense of audience. Three repeated measure

MANOVAs were conducted for each of these three categories of rubric scores across the two time periods, with pairwise comparisons.

Table 12

Means (s.d.) for Each Rubric Component Applied to Essays (final draft) for Beginning, and Ending Periods of the Semester

Measure	Treatment Group		Control Group	
	Beginning	Ending	Beginning	Ending
Thesis	3.0 (0.6)	4.0 (0.5)	2.8 (0.6)	2.8 (0.5)
Organization	2.8 (0.8)	3.8 (0.4)	2.9 (0.6)	2.7 (0.3)

MANOVA: Wilks Lambda for interaction effect, F (2, 16) = 6.45, p = .009.

Measure	Treatment Group		Control Group	
Format	2.7 (0.9)	3.8 (0.4)	3.3 (0.7)	3.2 (0.4)
Conventions	2.7 (0.5)	3.9 (0.3)	3.0 (0.5)	3.2 (0.5)

MANOVA: Wilks Lambda for interaction effect, F (2, 16) = 22.8, p < .001.

Measure	Treatment Group		Control Group	
Sentence Fluency	3.6 (0.5)	4.1 (0.3)	3.7 (0.5)	3.8 (0.3)
Word Choice	3.2 (0.6)	3.8 (0.4)	3.2 (0.7)	3.6 (0.2)
Sense of Audience	2.9 (0.4)	3.7 (0.4)	3.3 (0.4)	3.2 (0.2)

MANOVA: Wilks Lambda for interaction effect, F (3, 15) = 7.01, p = .004.
Note. Degrees of freedom for all contrast F values were 1, 17.

As shown in Table 12, the mean scores on all seven rubric categories for the treatment students increased across the two time periods. For two categories, the students made more than a 1-point increase: conventions with 1.2 point increase (from 2.7 to 3.9) and format with 1.1 (from 2.7 to 3.8). Thesis (from 3.0 to 4.0) and organization (from 2.8 to 3.8) both made 1 point increases, whereas sense of audience (from 2.9 to 3.7) made a

0.8 point increase, word choice a 0.6 point increase (from 3.2 to 3.8), and sentence fluency a 0.5 increase (from 3.6 to 4.1).

By contrast, the mean scores on the seven rubric categories for the control section showed a very small increase (less than 0.5 point) or decreased across the two time periods. Four categories had mean score decreases: format (from 3.3 to 3.2), sense of audience (from 3.3 to 3.2), convention (from 3.0 to 3.2), and organization (from 2.8 to 2.7). The other three categories made a slight increase in mean scores of less than 0.5 point: thesis with a 0.1 point increase (from 2.9 to 2.8), sentence fluency with a 0.1 point increase (from 3.7 to 3.8), and word choice with a 0.4 point increase (from 3.2 to 3.6).

For the three groupings of the rubrics, the MANOVA results all indicated significant interaction effects such that the groups differed in their scores across time. The pairwise comparisons of group and time showed that the treatment group indicated a significant difference over time, but the control group did not (see Table 12). This was consistent for five of the dependent variables: Thesis ($F (1, 17) = 7.47, p = .014$) and organization ($F (1, 17) = 7.25, p = .015$), format ($F (1, 17) = 12.42, p = .003$) and convention ($F (1, 17) = 25.1, p < .001$), and sense of audience ($F (1, 17) = 20.63, p < .001$). However, sentence fluency and word choice showed no significant group X time interaction (sense of fluency, $F (1, 17) = 2.18, p = .158$; word choice: $F (1, 17) = 1.01, p = .328$) .

Thus, for five of the seven rubric categories, students in the treatment group showed a significant improvement over time of on average one point on the 5-point scale whereas students in the control group on average showed no improvement or even a

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slight decline. These results indicated that the treatment students' essays improved

overall across the time periods of the semester but the control group's essays did not.

Additionally, I conducted another analysis that compared the final draft of the

first essay at the beginning of the semester and the first draft of the final essay at the end

of the semester. This comparison was chosen because I considered the final draft of the

first essay as the student's best work so far prior to receiving much instruction but with

teacher feedback helping them to write a better final draft, and the first draft of the final

essay as work that could represent each student's own work before receiving teacher

feedback.

Table 13
Means (s.d.) for Each Rubric Component Applied to Informative Essays (final draft) for Beginning, and CRP (first draft) for Ending Periods of the Semester

Measure	Treatment Group		Control Group	
	Beginning	Ending	Beginning	Ending
Thesis	3.0 (0.6)	3.5 (0.6)	2.8 (0.6)	2.8 (0.6)
Organization	2.8 (0.8)	3.8 (0.4)	2.9 (0.6)	2.7 (0.2)
MANOVA: Wilks Lambda for interaction effect, F (2, 16) = 6.976, p = .007				
Format	2.7 (0.9)	3.7 (0.4)	3.3 (0.7)	2.8 (0.3)
Conventions	2.7 (0.5)	3.6 (0.4)	3.0 (0.5)	3.2 (0.6)
MANOVA: Wilks Lambda for interaction effect, F (2, 16) = 30.4, p = .000.				
Sentence Fluency	3.6 (0.5)	4.0 (0.4)	3.7 (0.5)	3.5 (0.4)
Word Choice	3.2 (0.6)	3.3 (0.4)	3.2 (0.7)	3.2 (0.3)
Sense of Audience	2.9 (0.4)	3.3 (0.4)	3.3 (0.4)	3.0 (0.4)

As shown in Table 13, the mean scores on all seven rubric categories for the

treatment students increased across the two time periods increased. Organization and

format showed an increase of 1.0 in mean scores, from 2.8 to 3.8 and 2.7 to 3.7,

respectively. Conventions showed a 0.9 increase, from 2.7 to 3.6, and thesis increased

0.5 (from 3.0 to 3.5), followed by both sense of audience and sense of audience showing

0.4 increase (3.6 to 4.0 and 2.9 to 3.3). Word choice showed the least improvement, 0.1

from 3.2 to 3.3.

On the other hand, the mean scores on the seven rubric categories for the control

section showed very little improvement and an overall decrease over the two time periods.

Four rubric categories for the control section decreased across the two time periods:

Format decreased 0.5 (from 3.3 to 2.8), and sense of audience decreased 0.3 (from 3.3 to

3.0). Sentence fluency and organization both decreased 0.2 (from 3.7 to 3.5; 2.9 to 2.7).

Two categories, thesis (2.8) and word choice (3.2), did not show any change, whereas

only one category, conventions, showed a very minimum increase (from 3.0 to 3.2).

The MANOVA results all indicated significant interaction effects such that the

groups differed in their scores across time for the three groups of the rubrics. The

pairwise comparisons of group and time showed that the treatment group indicated a

significant difference over time, but the control group did not (see Table 13). This was

consistent for two of the dependent variables: organization ($F (1, 17) = 6.095, p = .024$),

and conventions (F (1, 17) = 45.41, $p < .001$). However, the other five categories showed

no significant group X time interaction (thesis (F (1, 17) = 1.33, $p = .264$; format (F (1,

17) = 2.03, $p = .172$; sentence fluency F (1, 17) = .576, $p < .458$; word choice F (1, 17)

= .126, $p < .727$; sense of audience (F (1, 17) = .387, $p = .542$).

 Thus, for two of the seven rubric categories, students in the treatment group

showed a significant improvement over time of on average one point on the 5-point scale

whereas students in the control group on average showed no improvement or even a

noticeable decline. These results indicated that the treatment students' essays improved

overall across the time periods of the semester but the control group's essays did not.

CHAPTER FIVE

DISCUSSION

The purpose of this study was to investigate naturally emerging types of talk produced during online discussion taking place throughout the semester by international students who were learning to do academic writing. I also made a connection between online discussion and students' subsequent writings. I considered this online discussion activity one of the critical interacting components in this class that defined students' learning experience and also influenced their academic writing. A summary of findings, limitations of the study, and implications for theory and research as well as practice are described in the following sections.

Summary of Findings

Findings of this study are organized according to the four research questions, and discussed along with other major phenomena that emerged in this study.

Treatment Students' Timed Writing Scores over the Semester

One of my research questions entailed whether timed writing scores of the treatment students, who had participated in a significant amount of online discussion, showed a change over the semester.

Treatment group students improved their timed writing scores over the semester. Whether targeting particular linguistic items in writing from an SLA perspective, or focusing on the overall writing improvement of writing from an L2 perspective (Ferris, 2006; 2010), I saw improvement in students' timed writings across the semester. In terms of these writing scores, one may wonder whether students' accumulated

experiences in online discussion might have contributed to their improved writing scores. Challenging this idea, one must recognize many other factors, such as course instruction, class activities, other assignments, each student's language ability, various levels of motivation and engagement, along with their cognitive capacity, were also possible contributors to students' successful learning. However, given that the treatment students participated in a computer-mediated activity that required highly demanding typing skills along with managing interactive cognitive loads, twice per week for thirteen weeks, it may not be too much to claim that online discussion influenced students' writing substantially.

Comparisons of Treatment and Control Groups' Essay Scores

Another of my research questions investigated a comparison of essays written by treatment and control groups to compare change over the semester.

The interaction effect of group and time for most rubric categories was significant, and showed improvement only for the treatment section. The pairwise comparison showed a significant difference over time for the treatment students but not the control group. For control students who were taught with the same textbooks and syllabus and completed the same major course assignments such as an informative essay early in the semester and a final research paper, their classroom experience was defined differently. Their face-to-face in-class activities, such as classroom discussions or group work, can be considered as some possible equivalents to the online discussion activity of the treatment section. Yet, they did not show improvement from early to late in the semester as the students who took part in online discussion.

Treatment students' sentence fluency and word choice in their essays did not show a significant improvement over time whereas other areas such as thesis, organization, and so on did show such improvement. The interaction effect of group and time was consistent for all rubric categories except for sentence fluency and word choice. This is contrary to my initial assumption that one of the primary contributions of online discussion might be to influence students' fluency development, considering many errors and mistakes in students' linguistic output but still managing to communicate their message in the ongoing fast flow of the discussion traffic. However, a statistical analysis showed that it was rather all other rubric categories of the treatment students' essays that showed a significant improvement over time, such as thesis, organization, format, sense of audience, convention, and overall mean scores. This showed that online discussion might be influencing students' writing, not merely in the area of language corrections or lexical definition exchanges, but also thesis formation, rhetorical awareness, and conventions of academic writings, which is considered crucial to writing in an academic setting.

Treatment Students' Experience in Online Discussions

Another research question addressed the nature of students' experience in online discussion over the semester. Findings for this research question are organized from both online discussion transcripts and interview data, as described below.

Students made voluntary learning moves during online discussion. From this study, I discovered that students made voluntary moves during online discussion to create substantial learning experiences for themselves, without particular instructions or

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directions given to them apart from the day's discussion topic. Although I did not give any particular instruction on the logistics of online discussion, such as what kinds of comments they had to make and how to participate in the online discussion, students naturally initiated and were engaged in the conversations to resolve linguistic issues, such as asking questions on grammar, syntactic structure, vocabulary meaning, as well as content knowledge, writing related inquiries, and intercultural knowledge, even in multiple threads at the same time. In this study, students' participation behaviors emerged, were maintained, and evolved throughout, in response to the continuous co-working of various factors in this learning environment, with the outcome that they continued to learn from the experience.

Students' typing speed affected their participation. Although typing speed became one of the factors determining amount of student participation, their language skill, such as their ability to read and write in English, was also a critical aspect, especially in an interactive and fast-paced computer-mediated environment. The fact that these students were able to manage the day's online discussion successfully by carrying on multiple discussion topics showed that their language level was advanced enough to help mutually pull each other into the discussion. Students coped with gaps they noticed in the target language and tried to make themselves more understood by clarifying their points. Several students reported during the interview that they realized the benefits of online discussion, while acknowledging themselves as international students who needed language practice.

Online discussion was a cognitively engaging activity. Students seemed engaged in multiple shifts in their thinking modes. When students walked into class and learned the day's materials explaining some aspect of academic writing, they shifted gears to an academic mode. They made another major shift to online discussion mode in which their thinking process was very much affected by their response to the discussion environment, now reflecting class objectives, other peers' comments and responses, their prior knowledge about topics, and their individual learning style, affective filter, and the day's mood. Other factors that might be conducive to learners' attentional shifts in these communicative activities were the day's topic of discussion, rapport among discussants, and learner factors as primary reasons that differentiated the occurrence of these episodes across discussions. In the meanwhile, their thinking process might have also been more acclimated numerous times, while thinking and processing ongoing information in English.

Students' first language affected the dynamics of the online discussion. Students' first language seemed to influence their participation patterns and discussion behaviors. Students who were Arabic speakers tended to use Arabic words and also transliterated Arabic sentences written in English pronunciation to communicate among themselves. Yet, students did not enjoy seeing their peers use their first language. During online discussion, some students, such as Adelgunda and Fleurette, warned other students several times not to use their first language because they tended to make jokes in their first language, rather than using it to resolve language issues, such as translating words or phrases that were not understood well by their peers.

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Other examples of first language influence were more subtle. Itsuo, who was from Japan, used exclamation marks at the end of his comments more often than other students, along with more polite questioning strategies, instead of using Japanese words directly in the middle of his comments. Fleurette who was French always tended to write more elaborated comments and English words that had French word endings. From these instances, I could see that not only their English proficiency but also their first language influenced their contributions to online discussions as well as their participation, as Lam (2004) and Thorne (2003; 2008) have mentioned.

Students displayed various participation behaviors. In addition, some students showed noteworthy participation pattern. Adelgunda and Mohammad were the most active students who made error correction moves throughout the semester. Adelgunda started self-correcting her spelling errors and always added several asterisks right next to her corrections, followed by Mohammad's same self-correction moves in subsequent discussions. These explicit self- and peer-correction moves spread and were duplicated among students to different degrees. This finding related to the findings reported in Ellis, Loewen, and Erlam (2006), who mentioned that students who received explicit metalinguistic feedback to the erroneous use of regular past tense in their utterances outperformed students who received either implicit recast feedback or no feedback. Although not all of the correction moves were grammatically accurate or taken up by others, these self- and peer-correction moves showed that students were aware of them and also highlighted the visual saliency and traceability of online discussion.

By contrast, Satam made more recast moves, without mentioning the fact that he was correcting others' linguistic errors. Talib and Abdullah made more clarification requests than others throughout the semester, asking and answering questions on discussion topics. Talib repeated the exact comments that other people made, which were either other-people correction on his erratic usages of language, or knowledgeable interlocutors' answers to other students' questions that seemed new and innovative to him.

Some students showed discussion managing behaviors more than other students, paying careful attention to how the online discussion was developing. Fleurette was very mindful about how other students participated in the discussion, and if they were not concentrating on discussion topics or if they distracted others by making jokes or contributing irrelevant topics, she directly told them not to disturb the discussion, bringing them back to the topic. By contrast, Husam managed the online discussion by asking key questions that structured the day's discussion, rather than making discussion-organizing comments. These participation behavior and interaction patterns showed that students were making use of the online discussion for their learning, as much as they might have done during face-to-face discussion in class.

Discussion topics influenced students' participation. I also found that there was an interesting connection between discussion topics and participants' participation behavior. When face-to-face lecture introduced new theoretical concepts about academic writing, students tended to review the technical terms introduced to them by asking about and reassuring themselves on their understanding during online discussion. When topics for online discussion required students to bring up content-related knowledge or their

own critical perspectives and opinions, students tended to ask questions that elicited their peers' perspectives, synthesizing and comparing a variety of views that emerged during ongoing discussion. They also provided their own knowledge that was grounded in culture- and country-specific domain knowledge. Throughout the discussion, language-related issues, such as spellings, grammar, and lexical issues, were woven into each thread.

Students initiated active knowledge co-construction. From early on in the semester to the end, students' moves for language-related comments and content-knowledge-eliciting inquires did not cease. It became more and more obvious as the semester progressed that students realized the utility value and thus actively made use of the learning opportunities provided by online discussion.

Furthermore, students also were frequently involved in active knowledge co-construction and negotiation of meaning, designating one another as a more knowledgeable interlocutor, as the topic of discussion shifted. Whenever discussion topics fluidly turned to particular disciplines, cultures, or countries, students who had prior knowledge about these topics initiated active comments on the topic, while others asked questions and made inquiries as they were seeking knowledge. Inquiries and comments that were brought up by one or more students at the beginning of a discussion were still taken up by others even toward the end of a discussion session. Students were resourcing one another depending on topics, while changing their roles and accumulating intercultural knowledge.

Additionally, students' referral to topics that had been brought up early in the discussion, in the middle of, and at the end of the discussion showed that the online discussion environment extended these ESL participants' linguistic and cognitive memory span under the pressure of real-time, fast-paced traffic while interacting with multiple conversation partners. Seet and Quek (2010) referred to CMD as serving as a mindtool to help one perform higher level of cognitive activities.

Peer influence was clearly evident in this study. From interview data, I also discovered that students' learning experience was actively formed and reconstructed by their peers. Students frequently made comments about their language abilities, in comparison to their peers,' as it affected their perceptions about their own participation. Some students expressed that when the day's discussion progressed faster than they could keep up, with other students making quicker and longer comments, they felt more challenged to make their own points clear under time pressure. Other students, on the other hand, complained when their peers made jokes or used their first languages.

Students realized the utility value of online discussion. The majority of students in the treatment group described both the online discussion and timed writing as new and fresh tools for them to improve and practice writing in English. They expressed interest and expectation in the interviews. At the beginning of the semester, they tried to adjust to the mechanical interface and procedure of downloading the *Skype* program, logging on to the conversation group, adding other users into the group discussion, followed by understanding the topic and initiating, maintaining, and concluding each online discussion. During each discussion, students interacted with one another via

online discussion and also collaborated in problem solving and knowledge co-construction.

In the middle of the semester, they expressed their feelings of improvement and comfort in participating in and contributing to online discussions, compared to the beginning of the semester, as well as some frustration they experienced when other participants were not cooperative or not willing to use the online discussion for learning. Some students expressed annoyance at others' disrespectful behaviors, such as making jokes and using their first language. Furthermore, they were curious about how other participants were really positioned behind the screen, apart from the online discourse they had produced.

For the timed writing, they wanted to receive feedback to visualize their progress over time, mainly through feedback from the teacher, with a various mixture and order of content-based and form-focused feedback (Chiu & Savignon, 2006). When written feedback was given, students were engaged in high-level revisions including structural and content revisions, compared to working on their own when they usually tackled only surface level revisions (Sze, 2009).

Early in the semester, most students did not make a clear connection between online discussion and subsequent timed writing, not realizing the utility and value of each as well as of both of them together. One student randomly mentioned that she felt so lazy to write timed writings. Later on, with my reinforcement and through continued practice every week, they began to feel that they had improved, especially in quality of vocabulary use and sentence structure. My goal was for learners to realize the usefulness

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of online discussion and timed writing, and they themselves seemed to become autonomous users of these tools for their writing development, strategically monitoring their progress over the time.

Types and Characteristics of Comments that Emerged during Online Discussion

My first research question addressed what were different types and characteristics of comments that students made in online discussions. Findings are described according to some major themes below.

Different types of comments emerged at the beginning, in the middle, and at the end of the semester. In terms of *language-related episodes*, I found some recurring patterns in conversational exchanges whose foci were coded orthographical, lexical, and grammar. As Alwi, Adams, and Newton (2012) reported, language support provided prior to task performance as well as detailed guidance regarding how to perform the task, might have reduced some cognitive load for students that as a result, may have afforded more opportunities for them to focus on the accuracy of their language use. For LRE orthographical focus, students made overt self/peer corrections at the beginning of the semester, whereas more recasts and explicit corrections took place in the middle of the semester. Toward the end of the semester, students who tended to be less active made more discourse moves to join the conversation and brought up several language-related issues, which in the end created multiple foci at the same time.

In terms of LRE lexical focus, students started providing in-depth definitions of vocabulary items from early on in the semester. Then, students' discourse moves that tackled lexical knowledge gradually increased in the middle of the semester, followed by

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active lexical knowledge co-constructions toward the end of the semester. Their inquiries also expanded from discrete vocabulary words to phrasal expressions toward the end of the semester. In terms of LRE grammar focus, similar discourse moves of self or peer corrections were seen from the beginning of the semester and intermittently spread throughout the semester. Toward the end of the semester, more common areas of grammatical weakness and recurring errors emerged, such as subject-verb or tense agreements and the distinction between countable and uncountable nouns. These instances that students brought up, and sometimes resolved themselves, showed the strategies they could utilize and the ability to find resources to establish the definitions of the words to teach one another.

In terms of *content-related episodes*, students began factual information exchanges from the beginning of the semester. From the middle till the end of the semester, students became gradually more involved in intercultural knowledge co-construction, elicited critical thinking from one another to evaluate the input, while collaboratively conducting paraphrase exercises, completing cloze tests, and solving various problems and questions. They also checked their understanding of readings by asking direct questions. For *writing-related episodes*, students applied new theoretical concepts to writing academic essays and determined how legitimate one's essay topic was while exchanging constructive feedback. They further discussed how to organize their ideas with supporting details in an essay, followed by ways to collect information from the readings. Students also tackled topics related to how to write more saliently

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than others, as well as how to document claims in one's writing essays by adhering to MLA documentation guidelines.

The majority of LRE orthographical focus was left unnoticed or unresolved. Most orthographical and grammar issues were left unresolved, compared to those that were lexical. This is congruent with Smith's (2005) findings that, although there was no clear way to interconnect participants' negotiation, their uptake, and target lexical gains found in the study, due to the interactive nature of negotiation which produced numerous opportunities for modification, many other signs of language acquisition still prevailed. More precise diagnosis is necessary to determine whether misspellings were typing mistakes or some inherently problematic issues that could emerge as signs of *interlanguage* development, in terms of participants' recurring attempts at orthographical self-corrections, with some unsuccessful or misspelled words going unnoticed or uncorrected, either explicitly or implicitly.

Contrary to the findings reported by Shekary and Tahririan (2006) that online negotiation, compared to face-to-face discussion, facilitated more LREs and noticing and better retention rate, leading to language gain, many errors or mistakes were either unnoticed or unresolved. I believe one reason was that these students were not used to typing in English initially and also throughout the semester, and their focus seemed to have been on fluency in their language use, rather than on accuracy of grammar or spelling in their posts. Although their typing speed seemed to improve by the end of the semester, to catch up with the fast pace of the discussion flow comprising multiple topics evolving throughout the discussion must have been a challenge. It also may have added a

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layer of pressure on students because some reported during the interview that they wanted to be extra cautious to be accurate when they composed and finally decided to hit enter to make their comments visible to other peers who shared the discussion screen.

The degree of students' familiarity with discussion topics was interconnected with the types and characteristics of LREs and their outcome. When students were not familiar with the discussion topic or questions brought up by their peers, they tended to be engaged in more lexical issues, rather than grammar issues. In Yilmaz's (2011) case, it was a task, either a dictogloss or a jigsaw, which was considered as a possible determinant of the amount of LRE types, foci, and outcome. From the findings of my study, I want to say that there seemed many other possible contributors to students' LREs, including tasks, in terms of their types, foci, and outcome. I think more emphasis and elaborated analysis should be placed on the outcome of LREs, as exemplified in Yilmaz's (2011) findings, with a dictogloss inducing orthographical focus and negative feedback, whereas with a jigsaw resulting in unresolved LREs.

In the middle of the semester, students were asked to discuss their final research paper topics, ask questions about others' topics, and request further information as well as clarification. Given that highly specialized vocabulary words or concepts needed to be explained by participants, the discussion contained more frequent inquiries about lexical issues and the meanings of words, as well as requests for clarification of one's understanding of words, while each participant self-corrected his or her own orthographical mistakes. A few instances of recasts took place as well.

As discussed by Tudini (2010), participants in CMD are engaged in intercultural interaction that shows how their conversations are structured through various patterns of discourse produced by participants. In this study, at the beginning of the semester, the structure seemed to show a few students discussing one topic, exchanging information or self- or peer-correcting any language uses that were noticed as ungrammatical or registered as problematic, in less than two to three turns in the dialogue. Toward the end of the semester, I noticed that students gradually combined their foci and tackled multiple issues in one thread at the same time. They also discussed more substantial topics that were integral to their understanding of the day's learning goals and key concepts about academic writing. This showed that students were gradually building up their experience with online discussion and thus becoming used to the dynamics of the online discussion atmosphere and flow.

Considering the details of what students reported, one cannot doubt some possible positive influence that online discussion seemed to have for treatment students' writing development, along with all other class activities. Furthermore, it is critical to acknowledge all other areas of writing instruction, such as class lectures and in-class activities, along with students' individual learner factors, played an important role in the treatment students' writing development.

Limitations of the Study

One of the limitations of this study was the small sample size. For the online discussion group, the number of online discussion was much more extensive than those in other studies, and thus the instances of interesting language phenomena were very rich.

However, to determine whether or how weekly online discussion participation spanning a semester influenced students' writing, a bigger sample size with more groups for the treatment and control comparisons, would have made the findings more robust. Only 10 students in the treatment group and 12 students in the control section participated in the study. Due to some absences and missing assignments, essay data from only 9 out of 10 (treatment) and 10 out of 12 (control) students could be analyzed. Had there been more students in each section, the results would have been more robust.

Furthermore, although they practiced timed writing as planned, the control group's timed writing submissions were too few to allow me to compare them to the treatment group's. Treatment students produced a total of 13 weekly timed writings, whereas the control students submitted only about five timed writings. Because of this reason, I used both group's essay submissions to compare the two groups, instead of the timed writings. Because timed writings were what students did in class, right after they completed their discussion activities, these would have been a better comparison, given that the essay assignment were given to students to complete at home and to submit by a deadline after going through editing multiple drafts.

In addition, in terms of students' writing scores, the treatment group did not show consistent improvement on all seven categories on the rubric. When I compared treatment and control groups' essays, sentence fluency and word choice did not improve significantly, compared to the other five categories which showed significant improvement over the semester. This might be due to the emphasis of the course on rhetoric and composition, and not particularly on targeting choices of words that students

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should make, or on how fluently they could produce the target language. This also implies that online discussion might influence more students' accuracy in language use, rather than fluency development.

Moreover, I did not have a chance to observe all sessions of the control class. Because the treatment section that I taught met at the same time as the control section, I decided to substitute audio recordings for my class observations. However, the control group instructor lost the voice recorder after two months, which caused a significant loss of audio data from the control section. However, I managed to save a total of five recordings spread throughout the semester and used these to understand the class atmosphere of the control section. I also conducted an interview with the instructor. Had I observed the control section class regularly, I would have had a better understanding of the class, and so been able to compare the control section's face-to-face discussion to the online discussion of the treatment section more precisely.

Implications for Theory and Research

CMD research that investigates mechanisms of online discussion has suggested the significant potential for CMD as a language learning tool and for instructional design, as well as for research and theory development. From this study, several issues arose that I want to address about research on CMD in classroom settings.

Theoretical perspectives. In my application of any theoretical framework, I realized that a researcher should constantly re-evaluate the theory to see if there is any area that needs to be modified or newly established.

In terms of an *interactionist* perspective, a more elaborated understanding of interaction patterns among participants may be necessary in future research. In this study, the provision of comprehensive input or modified interactions was not fully guaranteed, especially due to the semi-structured nature of online discussion whose participants were solely the students themselves. However, nevertheless, the students in this study were still learning target language and academic discourse.

Thus, I want to apply a new theoretical model, such as a *systems* perspective in my future research, applying a core concept of the theory, as well as testing my data against this theory. The primary focus of using a *systemic* perspective will be to describe how interacting components as agents of an emerging system give rise to collective behaviors. A systems perspective attempts to account for all components in a system, how they are interconnected and mutually influence one another. For my future research, I want to test components of a systems perspective to determine whether this theory can explain the learning phenomena of CMD in the classroom.

Some major concepts of a *systems* theory need to be reevaluated as well, and each term in the theory needs to be interpreted and applied. For example, when it comes to *nonlinearity*, a researcher who wants to use this concept for research needs to realize that although it is conceivable that one cannot determine learning outcomes of a learner or results of an intervention study, the learning outcomes of learners as well as their reactions throughout the class are somewhat determined under the big umbrella of learning objectives that circumscribe some possible outcomes, and thus are somewhat predictable within certain boundaries, especially in a language classroom setting.

Moreover, for *decentralized control*, when it is applied to classroom research, a teacher or an interlocutor still has shared control over course content and various class activities.

Although a *systems* perspective is applicable to both qualitative and quantitative studies, to conduct a study from the mixed method approach raises questions of ontology, epistemology, and methodology (Denzin & Lincoln, 1994). When I was conducting the quantitative analysis, I looked at each participant's writings, whether timed writings or essays, as discrete individual items without a preconceived notion of inherent interconnections. Often times, different pieces of writings produced by the same person were considered as separate pieces of data in the quantitative analysis. To combine these two data analytic approaches, I had to come up with a solid rationale behind the use of each method for my data analysis.

Research design. A future study will also benefit by including more focused and elaborated L2 writing and written corrective feedback analysis. Because I first discovered various kinds of talk emerging during online discussion as using *language-related episodes* or *form-focused episodes*, I did not pay special attention to computer-mediated written corrective feedback itself in particular. By targeting interactions among participants, recasts and uptakes produced during the interactions, and retention rate from these interactional exchanges, one would be able to measure better the instructional value of computer-mediated written corrective feedback, as well as how best to design tasks and activities to understand mechanisms and roles of written corrective feedback in language learning.

In terms of the design of the research, moreover, I strongly recommend that one should have more participants so as for the results to be more robust. I had only 22 students, 10 students in the treatment section and 12 in the control section. Although there was a substantial amount of online discussion data, including more L2 participants in each of the groups might have not only enriched the findings but also strengthened the robustness of the findings.

For online discussion, I focused more on the discussion topics than on the kinds or complexity of the tasks given during online discussion. The existing literature has been much interested in comparing two or three SLA tasks, but in reality, there is much more variety of tasks that need to be planned and organized around students' cognitive capacity and language needs. A future study on CMD in an L2 writing class should take into consideration more diverse tasks and their influence on how the day's discussion will unfold.

In addition, there needs to be systematic evidence that measures a direct interconnection and correlation between discourse presented in online discussion and students' writing. In my study, I compared a treatment and control group, especially whether either one made improvement in their essays. However, a future study will benefit from finding linguistic evidence that will bridge online discussion and students' writings, such as students' language patterns in the form of the same parts of speech or word families, idiomatic expressions, and repeatedly reconstructed grammar or lexical items in their writings. Finding such direct evidence to test the influence of online

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discussion on students' writing assignments would enhance the quality of claims of the benefits of online discussion on second language acquisition.

Implications for Practice

From the findings of this study, I want to make the following suggestions to teachers of L2 writing. First, I encourage instructors and practitioners to consider implementing technology-enriched class activities in their instruction. Although there has been an increasing use of technology, especially in delivering or presenting course content, many teachers still plan pen-and-paper types of traditional class activities with blackboard and textbooks, rather than having students make use of electronic devices or software that contain instructional materials to target particular grammar items or language structures. L2 writing teachers should be more cognizant of the kinds of language software and activities they can use in their instruction, as well as the benefits of technology use in their classroom.

Moreover, when it comes to the use of technology, teachers need to be more alert to students' prior technology experience in a classroom. When it comes to the L2 class, it is more common that some students will have very little or no computer experiences, with different degrees of exposure to technology-enriched classroom activities. Students' prior experience and knowledge, as well as how comfortable they are in maneuvering computer devices or various software, influence their tolerance toward any technical issues or ambiguities that they have in dealing with using a new technological device. The degree of interference students experience while tackling computer assisted language activities affects their learning outcomes, and teachers of L2 writing classes should tailor

electronic outlining (De Smet, Brand-Gruwel, Leijten, & Kirschener, 2012) or the use of training sessions prior to a task activity (Alwi, Adams, & Newton, 2012), depending on their students' technology background.

Moreover, when teachers implement technology in their classroom, they should plan activities that target students' linguistic weaknesses. Along with checking students' prior technology experience and how comfortable they are in using language software or devices, teachers should also make sure of implementing the right kind of technology-enriched activities according to students' language level and learning objectives. Depending on whether students are learning grammar rules, sentence structure, vocabulary or idiomatic expressions, or academic discourse, only the right kind of computer-enriched activities that tackle these target items and structures will bring in optimal learning outcomes.

I also realized as a result of my study that teachers should have systematic ways of evaluating students' participation and progress in computer-assisted activities. In my study, students wanted to receive feedback on their timed writing, as well as on their postings made during online discussion. Teachers should decide and explain explicit evaluation criteria prior to and throughout the semester. Follow-up and feedback are some of the ways to ensure quality of students' experience in technology-enriched activities. Also, as shown in the treatment students' essay scores, sentence fluency and word choice were not as significantly improved, compared to other dependent variables. This caused me to think that an instructor should consider all the areas of linguistic development and plan online discussion topics and activities accordingly, when planning

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a language class, especially a writing class that has computer-mediated discussion activities. Findings from my study, especially, caused me to think about some possible discussion activities that would target fluency development as well as word choice development, such as word mixed use of simple and complex clause structure, word families, and collocation exercises.

Once teachers of L2 writing implement technology, they must make sure to create a venue to incubate as many knowledge co-construction opportunities as possible. I discovered from this study that students could quickly adapt to the learning environment of online discussion and make use of the opportunities of interacting with students from various cultural and ethnic backgrounds sharing their own experience and knowledge. They initiated discussion questions, provided answers to one another, managed multiple dialogues, and made interesting inquiries to collaborate among themselves throughout the knowledge construction process. By tailoring the degree and role of their involvement in a technology-enriched class, teachers can foster students' knowledge co-construction and collaboration opportunities.

To foster a shared rapport among students is also critical, especially when computer-assisted activities are designed for groups. In my study, many students often reported their awareness of their peers' participation behavior as well as classroom manners. Their impression of their peers affected their attitude toward timed writing and online discussion activities, as all participants were responsible for co-creating valuable learning experiences.

Appendix A Timed Writing Error Number Reference Chart

Timed Writing Error Number Reference Chart

Instructions:
1. Read your in-class timed writing.
2. Use the Number Reference Chart below to identify your errors.
3. Complete the Error Frequency Log in your timed writing folder (print off Moodle in future).
    a. Identify your 3 most frequent errors and highlight them on your Error Frequency Log.
    b. Count your total number of errors, divide that by the total number of words, and document your final error percentage. (# of Errors/# of words = %)
4. Correct and revise your errors and turn in a second draft (print & post).
    a. If you are unsure how to correct the error, try your best.
    b. If you are curious about an error that you cannot solve, come see me or email me.
    c. If you don't understand what an error number means, do your own research (Google it – "FANBOYS grammar" gets about 200,000 results).

#	Error	Examples
1	Verb Tense	Yesterday, I ~~go~~ went. I ~~studied~~ have studied English since I was 10. Life would be difficult if the internet ~~were~~ had not been invented (*if* conditionals)
2	Verb Form	I ~~going~~ am going.
3	Word Choice	Older people ~~had better~~ should learn to use computers if they want to get a job. (modals) After drinking all night, ~~his condition was not good~~ he had a hangover/he was sick. (idioms/phrases) There are ~~a great amount~~ a lot of people who use Facebook. (better word, style, formality, awkward)
4	Word Form	Sometimes technology can make life more ~~complication~~ complicated. (wrong part of speech) Internet ~~technological~~ technology is expanding rapidly. (wrong part of speech)
5	Subject-Verb Agreement	Many people ~~has~~ have never been there.
6	Singular/Plural or Count/Non-Count	These ~~person~~ people like coffee. (singular/plural) There has been ~~many researches~~ much research done on the internet. (count/non-count)
7	Articles/Determiners/Possessive Pronouns	(a, an, the, or no article, this/that, these/those, his/hers/ours, etc.) The internet has been the greatest invention in the last 100 years. Writing will help us improve ~~us~~ our English.
8	Coordination	(Correct: SVC, and SVC. Never start a sentence with a FANBOYS) ~~And~~ for this reason, people should learn to use the internet.
9	Subordination	Because the internet is so widespread, people around the world can keep in touch. People around the world can keep in touch because the internet is so widespread. (Correct: SVC because SVC. Because SVC, SVC.) (adverb clauses, noun clauses, adjective clauses, etc.)
10	Fragment	(Incorrect: SC; VC; And SVO; i.e. incomplete sentence) Writing is fun. (SC = missing verb) He Likes soccer. (VC = missing subject) Incorrect: And the internet is great. (sentence started with FANBOYS) Incorrect: Because the internet is great. (subordination with only one clause)
11	Run-On Sentence	I like apples, but he likes bananas. Incorrect: SVC and SVC (run-on sentences need commas between clauses)
12	Comma Splice	Incorrect: SVC, SVC (needs coordination or subordination)
13	Spelling	I liked ~~there~~ their presentation. AEP: spell out contractions! He ~~didn't~~ not know it.
14	Capitalization	Paris, ~~f~~France is my favorite place to visit. She told me ~~i~~I was a good writer.
15	General Punctuation	For example, I love soccer. I love soccer, for example. (commas surround transition phrases) The internet allows you to do many things, such as socialize, research, and shop. (comma before *such as*) I love Paris, France.
16	Comma in a List	Writing is important, valuable, and fun. (comma before *and* in Sarah's class)
17	Extra Verb, Subject, or Object Missing Verb, Subject, or Object	Writing ~~is~~ can be fun. (extra verb) Is important to be a good writer. (missing subject, add *It*) He likes soccer ~~him~~. (extra agent)
18	Parallelism	Intelligence, humor, and ~~having~~ a ~~great~~ sense of humor are three great skills. (items in a list

		must match grammatically)
19	Pronoun Reference	Writing is important. ~~He~~ It is good for my future. (wrong referent) People must know how to use the internet these days because everything ~~you~~ <u>people</u> do is online. (consistent referent) Ann borrowed her sister's car, but ~~she~~ <u>her sister/Ann</u> wasn't happy about that. (unclear referent)
20	Preposition	Hackers have been accused ~~to~~ <u>of</u> stealing (phrasal verbs) The internet was invented ~~on~~ in 1970.
21	Word Order	Seldom <u>do</u> we ~~do~~ hear about such occurrences. (inversion) The Internet ~~greatly~~ has <u>greatly</u> improved our lives. (adverb order)
22	Gerunds/Infinitives	I don't mind ~~to do it~~ <u>doing</u> it. It is irresponsible ~~allowing~~ <u>to allow</u> children to use the internet freely.

Appendix B Timed Writing Error Frequency Log

Timed Writing Error Frequency Log

Timed Writing # _____   Name:

_____

Word Count: _____   Date:

_____

#	Error	Frequency	Examples from My Writing (optional)
1	Verb Tense		
2	Verb Form		
3	Word Choice		
4	Word Form		
5	Subject-Verb Agreement		
6	Singular or Plural		
7	Articles/Dets/PossPronouns		
8	Coordination		
9	Subordination		
10	Fragment		
11	Run-On Sentence		
12	Comma Splice		
13	Spelling		
14	Capitalization		
15	General Punctuation		
16	Comma in a List		
17	Extra Subject or Verb		
18	Parallelism		
19	Pronoun Unclear		
20	Preposition		
21	Word Order		
22	Gerunds/Infinitives		
	Total # of Errors:		
	Total # of Words:		
	Error Percentage:		

Appendix C Treatment Student Interview Questions

1. What is your writing like in an online setting with other people?
2. How does it differ from your own individual writing? In your experience, what is the difference between individual writing and writing in an online discussion forum?
3. What process do you go through when participating in online discussion? Can you tell the entire process? How do you begin? What happen in the middle of the way?
4. What do you focus during online discussion?
5. Describe what you notice about how you and your classmate write during online discussion.
6. How was your experience of collaborative problem solving during online discussion?
7. What were advantages of problem solving by using online discussion?
8. What were challenges of problem solving by using online discussion? What was the difficult part?
9. What was your experience of the online discussion like at the beginning of the semester? How about at the end of the semester? Has it changed? How?
10. Describe your role as an online discussion leader.
11. What do you think about timed writing?
12. What are all process involved and how do you write your timed writing?
13. What affects your timed writing?
14. What was the timed writing like for you at the beginning of the semester? At the end?
15. Do you feel that you contribute more to the class in Skype or in face-to-face conversations? What reasons can you attribute to why you are more vocal in one environment as opposed to the other?
16. Do you feel more inclined by other members of the class in Skype or face-to-face conversations? Do you feel that the environment makes a difference in how other members listen and respond to your comment?
17. Overall, which environment do you prefer for classroom discussion: Skype or face-to-face? What do you see as the advantages or disadvantages of each?
18. What are differences and similarities between face-to-face and online discussion?
19. Did you ever feel ignored in either Skype or in face-to-face discussions? If yes, what (if anything) did you do about it?
20. In my class, I am most confident when
21. In my class, I am least confident when
22. How did you like the interface and features of Skype as an online discussion setting:
23. What are convenient features that help your writing during online discussion?
24. What features hindered your writing during online discussion?
25. How did you like online discussion experience? List 3-5 things.
26. The best thing about this course is
27. I would suggest the following ways to improve this course

Appendix D Treatment Group Survey Questions and Results

LANGUAGE LEARNING

Statistic	Min Value	Max Value	Mean	Variance	SD	Total Responses
My reading skills in English improved as a result of online discussion activities.	3	7	6	2.22	1.49	10
The information from online discussion activities contributed greatly to my knowledge about American culture.	3	7	6.1	1.66	1.29	10
My writing skills in English improved as a result of online discussion activities.	3	7	6.1	1.66	1.29	10
I learned more English skills in this class where I can participate in both oral and written discussions.	3	7	6	1.78	1.33	10
Online discussion contributed greatly to my knowledge of English grammar and vocabulary.	3	7	6.2	1.73	1.32	10
I learned a lot from composing comments or blog entries to post in online discussion forums.	3	7	6.2	1.73	1.32	10
Online discussion activities contributed to my understanding of reading materials in class.	2	7	5.9	2.54	1.6	10
It takes more time to read and comprehend postings of students from other ethnic background.	1	7	4.2	5.51	2.35	10
Through computer-mediated discussion, I could see different rhetoric pattern of students from different ethnic background.	4	7	5.8	1.51	1.23	10
I understand postings of students from other ethnic backgrounds without any difficulties.	3	7	6	1.78	1.33	10
I am comfortable speaking English in class.	3	7	6.2	1.73	1.32	10
I feel reasonably confident in my written English.	2	7	5.8	2.62	1.62	10
I am comfortable in reading English.	2	7	5.7	2.9	1.7	10
I can express my thoughts reasonably well in conversational English.	3	7	6	2.22	1.49	10
I can express my thoughts satisfactorily in written English.	3	7	6	2.22	1.49	10
I understand spoken English reasonably well.	3	7	6.33	2	1.41	9
I speak only English in this class and don't find it necessary to use my native language to express my ideas.	1	7	5.3	4.68	2.16	10
I can express my thought satisfactorily in written compositions in English.	3	7	6	2.22	1.49	10
I understand spoken English reasonably well.	3	7	6.1	2.32	1.52	10
Tasks during online discussion were appropriate for my writing skill development.	3	7	6.3	1.79	1.34	10
Online discussion topics helped me review course content.	2	7	6	3.11	1.76	10

MOTIVATION

Statistic	Min Value	Max Value	Mean	Variance	SD	Total Responses
Online chat is an interesting activity which motivates me to learn more in class.	3	7	6.2	1.73	1.32	10
Online discussion helps me to be more engaged in the content of the class than a regular English class would have.	3	7	6.1	2.1	1.45	10
The instructions on the board for each lab day were helpful.	3	7	6.1	2.1	1.45	10
Access to the lab or to the computer was adequate.	3	7	6.25	1.93	1.39	8
I like the learning environment of having a regular schedule lab period.	3	7	6.1	1.88	1.37	10

	Min Value	Max Value	Mean	Variance	SD	Total Responses
I would prefer to be able to go to lab at any time to do the required activities.	3	7	6.2	1.51	1.23	10
It would be fun to take another ESL course that has an online discussion component.	3	7	6.4	1.6	1.26	10
The tasks I performed on the online discussion were interesting and engaging..	4	7	6.3	1.12	1.06	10
Different writing assignments using online discussion made the content of the class more interesting.	3	7	6.2	1.73	1.32	10
My engagement is different between online and oral discussions.	3	7	5.89	2.36	1.54	9
I feel more comfortable in participating online discussion.	2	7	6	3.25	1.8	9
I usually feel relaxed and confident when active participation takes place in class.	3	7	6.33	1.75	1.32	9
I enjoy discussing ideas with my classmates in class.	3	7	6.2	1.73	1.32	10
I enjoy studying the English language	4	7	6.2	1.51	1.23	10
I enjoy writing in English.	4	7	6.3	1.12	1.06	10
I like listening to English and trying to understand it.	3	7	6.3	1.79	1.34	10
I feel that my pronunciation is good.	2	7	6	2.89	1.7	10
I can express my self reasonably well in conversational English.	3	7	6.2	1.73	1.32	10
I really don't like my composition to be evaluated.	1	7	3.8	7.07	2.66	10
I don't like re-writing my compositions.	1	7	4.4	5.38	2.32	10
I usually get anxious when I have to respond to a question in this class.	1	7	4	7.11	2.67	10
I am embarrassed to volunteer answers in this class.	1	7	4.3	7.34	2.71	10
I am generally tense when participating in this class.	1	7	4.2	6.62	2.57	10
I can never understand why other students are so nervous in this class.	1	7	4.6	5.82	2.41	10
I felt it was very easy to participate in online discussion.	3	7	6.3	1.57	1.25	10
I want to play a role as a discussion leader.	3	7	5.7	2.46	1.57	10

TECHNOLOGY

Statistic	Min Value	Max Value	Mean	Variance	SD	Total Responses
During the lab activities, the instructor provided vocabulary help concerning the use of computer.	3	7	5.7	2.23	1.49	10
The instructor interacted with me to facilitate difficulties in the use of the computer.	3	7	5.9	2.1	1.45	10
The instructions on the board for each lab day were helpful.	3	7	6	2	1.41	10
Access to the lab or to the computer was adequate.	4	7	6.4	0.93	0.97	10
I like the learning environment of having a regular schedule lab period.	3	7	6.3	1.79	1.34	10
I would prefer to be able to go to lab at any time to do the required activities.	3	7	6	2	1.41	10
The layout of online discussion board is engaging and easy to understand.	2	7	6.2	2.62	1.62	10
I am comfortable to use online discussion tool for my learning.	3	7	6.1	1.66	1.29	10
Features of online discussion tool are user-friendly.	3	7	6.44	1.78	1.33	9
The scroll-down function during synchronous chat does not work well and inconvenient.	1	7	5.33	4.25	2.06	9
I like writing on a computer.	2	7	6.1	2.54	1.6	10
I liked Skype group discussion features.	2	7	6.22	2.69	1.64	9
Skype discussion features suited online discussion	4	7	6.4	0.93	0.97	10

agenda.

	Min Value	Max Value	Mean	Variance	SD	Total Responses
It was easy to download and set up Skype discussion function.	2	7	5.9	3.43	1.85	10

GENERAL

Statistic	Min Value	Max Value	Mean	Variance	SD	Total Responses
I had a positive experience in the online discussion activities in this class.	3	7	6.4	1.6	1.26	10
As a result of my experience in this class, I was looking forward to other classes with online discussion activities.	3	7	6.2	1.73	1.32	10
My peers contributed to my learning in the online discussions associated with this class.	3	7	6.3	1.57	1.25	10
I saw these online discussion activities as helpful to my learning for this class.	2	7	6.3	2.46	1.57	10
In comparison to face-to-face group work, I prefer online group discussion activities.	2	7	5.8	2.84	1.69	10
I understood my instructor's intention or purpose for the online discussion activities.	4	7	6.5	0.94	0.97	10
Requirements, expectations, and formats of online discussion activities were clearly stated for this class.	3	7	6.3	1.57	1.25	10
My teacher contributed almost never in our online discussion activities.	1	7	4.6	7.6	2.76	10
I appreciated the degree to which the teacher participated in online discussion.	4	7	6.2	1.07	1.03	10
My understanding of the course concepts improved as a result of online discussion activities.	2	7	5.9	2.54	1.6	10
My fluency with ideas or course concepts (my ability to process ideas quickly and to express myself) improved as a result of online discussion activities.	3	7	6.2	1.51	1.23	10
The task of actually writing comments or blog entries helped me understand course concepts better for this class.	2	7	5.9	2.77	1.66	10
Online discussion activities contributed to my understanding of reading materials in class.	2	7	6.1	2.54	1.6	10
Online discussion was an interesting activity that motivated me to learn more and participate more in class.	3	7	6.5	1.61	1.27	10
Online discussion helped me to be more engaged in the content of the class than a class without online discussions would have.	4	7	6.5	0.94	0.97	10
I enjoyed doing the online discussion activities.	3	7	6.4	1.6	1.26	10
The online discussion tasks I performed in this class were interesting and engaging.	3	7	6.4	1.6	1.26	10
The instructor was helpful in providing solutions to technical difficulties or technological problems (e.g. Internet connection, discussion board crash, etc.).	3	7	6.1	2.1	1.45	10
The interface for the online discussion activity(ies) was easy to maneuver (e.g., the scroll function, the screen display, etc.).	2	7	5.9	2.77	1.66	10
I found the online discussion environment comfortable for my learning.	3	7	6.3	1.57	1.25	10

Appendix E Control Group Instructor Interview Questions

Teaching

1. What were you doing in class when you gave instruction? What kind of instruction was going on? Please describe your writing instruction.
2. What do you address different topics/genres of writing in class to your students?
3. Can you tell me about your writing instruction? At the beginning, in the middle, and at the end?
4. What have been some challenges you face while teaching?
5. Has the topic of CMD coming up? Or, any technology use?
6. Please describe your writing instruction.
7. What is the most important thing in your teaching writing?

Students' reaction & systemic view

8. Can you describe students' interaction? Did you anything to produce more interaction among students?
9. Do you think interaction among students helped their learning?

Measurement

10. How did you measure students' writing development?

Suggestions

11. What will you do differently?
12. What did you do well?

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