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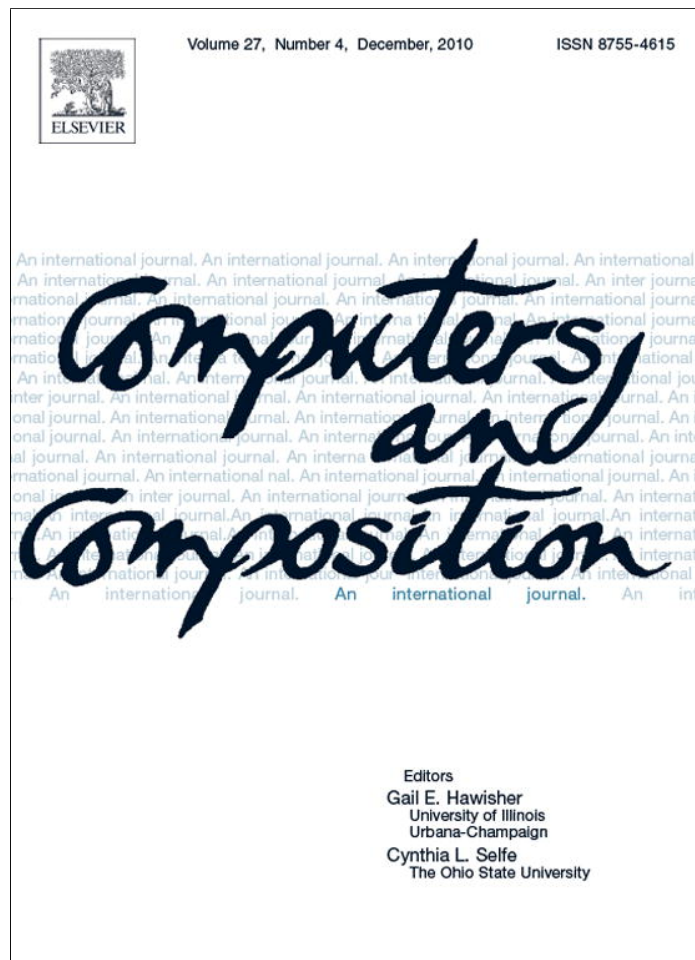# Dynamic Motives in ESL Computer-Mediated Peer Response

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ELSEVIER

Dynamic Motives in ESL Computer-Mediated Peer Response

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Abstract

This paper reports a case study investigating how the use of instant messaging (IM) mediated ESL students' motives in their participation in computer-mediated peer response (CMPR) tasks in an ESL academic writing class. Qualitative data including interview transcripts, chat transcripts, on-and off-screen behaviors captured on video cameras and with a screen-capturing tool, researcher observations, and student drafts collected from two low-advanced-level ESL students were analyzed. Data analysis indicated that with the opportunities afforded and challenges presented by IM technology, the ESL students were driven by heterogeneous and multiple motives even when they were participating in the same task, and their engagement in multiple motives was dynamic rather than static. The use of IM mediated the formation and shift of students' motives within and across the CMPR tasks.
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1. Introduction

For the past two decades, peer response, a collaborative learning task in which students exchange their writing drafts and provide feedback on each other's writing for the purpose of revision, has been used in both first-language (L1) (Grabe & Kaplan, 1996) and second-language (L2) writing classrooms (Ferris & Hedgcock, 2005; Liu & Hansen, 2002; Mittan, 1989). Compatible with the process approach to second-language writing instruction and supported by learning and language development theories that emphasize the role of social interaction (Vygotsky, 1978), peer response has had an important impact on classroom instruction in the L2 context and has become a topic of frequent discussion and debate (Ferris & Hedgcock, 2005). Many L2 writing researchers and educators argue that peer response allows students to receive multiple sources of feedback (Mittan, 1989), develop audience awareness (Zamel, 1982), build writer confidence (Leki, 1990; Mittan, 1989), engage in meaning negotiation and interaction (Guerrero & Villamil, 2000; Mendonca & Johnson, 1994; Tang & Tithecott, 1999), and benefit from opportunities for L2 development (Mangelsdorf, 1989). However, potential challenges associated with the implementation of peer response in the L2 writing classroom such as students' lack of experience, knowledge of writing, and the communication strategies necessary for offering effective feedback (e.g., Leki, 1990; Mangelsdorf & Schlumberger, 1992) as well as negative views of peer response (Mangelsdorf, 1992) have been recognized.

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Much of the extant L2 peer response research has focused on peer response in face-to-face situations and has examined both the impact of peer response on student writing (Hedgcock & Lefkowitz, 1992; Mendonca & Johnson, 1994; Paulus, 1999; Villamil & Guerrero, 1998) and the process of peer response. Research that has examined the impact of peer response on L2 writing development often focuses on the influence of peer response on student revision, particularly in terms of global and meaning-related changes, and indicates that peer feedback can stimulate macro-level revisions. For example, in Trena Paulus' study (1999) examining the influence of peer and teacher feedback on the writing by a group of ESL students enrolled in a university-level pre-freshman composition course, 15.3% of the revisions students made as a result of peer feedback were macrostructure-level meaning changes, similar to the percentage of revisions (16.1%) that they made as a result of teacher feedback. Research that has examined peer response process has focused on student interaction through examining students' stances during peer response (i.e., how students approach peer texts), patterns of interaction, and enactment of reader and writer roles in mixed peer response groups (Mangelsdorf & Schlumberger, 1992; Lockhart & Ng, 1995; Storch, 2002; Zhu, 2001). In particular, studies focusing on L2 peer response processes have shed considerable light on the complexity of L2 peer response processes and have revealed that L2 students assume different stances in peer response tasks and engage in different patterns of interaction.

The advent of computers in L2 writing classrooms has offered new possibilities for instructional innovation and opened a new area for investigation. Over the past decade, second-language researchers (e.g. Warschauer, 1996; Warschauer & Kern, 2000) have discovered that compared to a non-electronic classroom environment, second-language learners are more participative in group work through electronic discourse. The growing body of research on computer-mediated communication has supported enthusiastic use of computer-mediated communication in second-language classrooms, including English as a Second Language (ESL) writing classrooms. Computer-mediated peer response (CMPR) tasks in which ESL students provide feedback on each other's writing through computer-mediated tools have been introduced to ESL writing classrooms, and second-language writing researchers (e.g., Braine, 2001; Liu & Sadler, 2003; Tuzi, 2004) have examined the influence of CMPR on student writing. Similar to studies examining face-to-face peer response, studies investigating the impact of CMPR on L2 student writing have often focused on the role of e-feedback in student revision. For example, Frank Tuzi (2004) found that in his study e-feedback, a significant part of which came from peers, played an important role in stimulating revisions in general and in generating macro-level revisions in particular. Also, it provided new ideas that students could address in subsequent revisions.

Existing empirical studies on CMPR in ESL writing classes have provided valuable information about the influence of technology on the nature and type of peer feedback and on student revision. An area that remains to be investigated concerns the influence of technology on the process of student participation in peer response tasks. Among the technologies adopted for peer response tasks, synchronous text-based communication such as instant messaging has become the most popular daily communication choice among the younger generation across the world (Jin, 2008). With a mixture of speech-writing communicative features, instant-message-based academic tasks have attracted many language instructors for their potential in language learning, particularly in the development of speaking and writing skills. It would be intriguing to closely examine student participation in peer response in the instant-message-mediated environment. Such investigation would shed considerable light on how the use of technological tools influences students in CMPR tasks and how students may develop through their participation in CMPR tasks.

This paper reports a case study investigating how the use of a synchronous tool, an instant messenger program, influenced the participation of two ESL students in three CMPR tasks in an ESL academic writing class in the summer semester of 2006. More specifically, through the lens of activity theory (Engeström, 1987, 1999; Leont'ev, 1981), which posits that development originates from social interaction that is constantly mediated by a variety of physical and psychological tools (Vygotsky, 1978) or artifacts (Wertsch, 1991; Wertsch, 1998) and that all human social interaction is a mediated learning and developmental process that can only be understood through the analysis of participants' motives, the reported study examined how the use of instant messaging mediated the motives of two ESL students who participated in three CMPR tasks.

2. Theoretical Framework

This study was theoretically guided by activity theory, which was extended from Lev Vygotsky's (1978) sociocultural theory, further developed by Vygotsky's best friend and pupil Alexei Leont'ev (1981) in the 1930 s, and later expanded by Engeström (1987, 1999) and other scholars. Activity theory is a social psychological approach to understanding

human mental functioning, social contexts, and processes surrounding mental behaviors. It provides a cultural historical view of human behaviors that result from socially and historically constructed forms of mediation through mediational artifacts in all human activities (Engeström, 1987; Lantolf, 2000). The mediational artifacts in a human activity are comprised of both physical tools, such as computer tools and books, and symbolic/psychological tools, such as languages, signs, and concepts (Luria, 1973, cited in Lantolf, 2000). In a sociocultural view of human learning and development (Vygotsky, 1978; Wertsch, 1991; Wertsch, 1998), using tools makes it possible for humans to act in a more functional and powerful way and enhances and alters human development. Activity theory, however, does not represent a monolithic theoretical approach. Victor Kaptelinin (2005) argues that activity theory "can be described as a variety of approaches sharing basic principles but differing in how these principles are implemented" (p. 8). Kaptelinin considers work by Leont'ev and Engeström as representing two key approaches to activity theory, and Kaptelinin maintains that these approaches are "complementary" rather than competing.

Leont'ev (1981) argues that human practices can be analyzed at three levels: activity/motive, action/goal, and operation/conditions. Meaning "doing in order to transform something" (Kuutti, 1996, p.25), the *activity* is the unifying element and the unit of analysis in activity theory. An activity is driven and defined by its motive and is realized as goal-directed actions, the chains of which are related to an underlying motive. In order to thoroughly understand why humans conduct certain practices, it is essential to decipher the motives that drive individuals' activities. That is, human practices can only be understood if their motives are considered. Leont'ev (1981) proposes that "there is no unmotivated human activity. . . . the object of an activity is its true motive. It is understood that the motive may be either material or ideal, either present in perception or existing only in the imagination of thought" (p. 62). According to Kaptelinin (2005), the "object" of activity in Leont'ev's approach is related to human's need and motivation (p. 11). In addition to emphasizing the role of motive in directing human activity, Leont'ev also proposes that an activity can have multiple motives when it responds to multiple needs. In other words, one activity can be driven by multiple motives. Further, these motives can be ranked hierarchically according to their directional functions in the activity system. However, it is not clear exactly how to rank the motives methodologically.

Embracing activity theory in the analysis of computer-human interaction, computer scientists (e.g., Kaptelinin, 1996; Kaptelinin & Nardi, 2006; Kuutti, 1996) advocate an examination of computer technologies' transformational mediation in human behaviors from a theoretical view of activity. Kari Kuutti (1996) proposes that information technology can support and penetrate human activities at all levels. The mediation of technology at the activity level can be reflected in the technology's existence, which makes an activity possible and feasible. Some computer-human interaction researchers (Kuutti, 1996; Nardi, 1996) admit that the relationships between information technology and human activities may be more complex than we expect. Activity theory provides an inspiring and useful framework to understand human-human interactions in a computer-mediated environment. In particular, it allows for the examination of the effect of technology on the formation of new motives and the consequent reconfiguration of the activities–in other words, the reshaping of existing activities.

Other important concepts provided by activity theory that are relevant to the present study include conflicts and contradictions, which are considered to be the trigger of development (Thorne, 2004). According to the third generation of activity theory expanded by Engeström (1987), Engeström (1999),[1] each subject engaged in an activity system also functions as an individual agent who has an individual history and may react to the context in various ways. This indicates that subjects may be driven by different motives although they are involved in the same task. Activity theory sees contradictions as sources of development; activities are virtually always "in the process of working through contradictions" (Kuutti, 1996, p. 34). The learner's development occurs when confronting these contradictions and undertaking a series of actions to change and solve the contradictions. These changes in turn may produce new contradictions. Thus, learning and development occur in an ongoing contradiction-change cycle. This contradiction solving and new object/activity creating process is perceived as development from the activity theory perspective.

The introduction of computer technologies in language learning has triggered more questions about students' participation in technology-enhanced learning tasks. In the case of L2 peer response, how technology influences students' participation in CMPR tasks needs to be examined. In the sections below, we report a study that was designed to address this issue. Inspired by Leont'ev's proposition of human motive/object as well as Kuutti's (1996) view of

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[1] Engeström (2001) concludes there are three theoretical generations in the evolution of activity theory: Vygotsky's model of mediated actions, Leont'ev's three-level model of activity, and Engeström and Cole's work on interacting activity systems.

computer mediation at the activity/motive level, we examined the role of technology in two ESL students' participation in three CMPR tasks with a focus on (1) the students' motives when participating in CMPR and (2) the mediation of technology (i.e., instant messaging) in the formation and shift of the students' motives. Drawing from other perspectives and constructs of activity theory, such as contradiction and development, we also discuss development which occurred due to motive shift during students' participation in the CMPR tasks.

3. Methodology

3.1. Study Context

The study was conducted in the English Language Institute (ELI) at a metropolitan research-oriented public university in the Southeast U.S. in summer 2006. More specifically, it took place in a low-advanced-level (Level 4) academic writing class whose purpose was to improve ESL students' written communication skills in the U.S. higher-education academic discourse. A total of 11 students from Belgium, Belize, Mexico, Saudi Arabia, Taiwan, Turkey, and Venezuela were enrolled in the class. This writing class took place from 10:00 to 11:00 am every weekday, and one of the researchers was the class instructor. In addition to taking the writing class, all enrolled students also took required courses in listening, speaking, and reading in the morning as well as other elective courses such as the Test of English as a Foreign Language (TOEFL) and Graduate Record Examination (GRE) preparation in the afternoon. The purpose of the study was explained to the students at the beginning of the course to obtain consent from them for participation in the study.

Students in the writing class were required to write a two-to-three-page academic essay in each of five writing modes: compare and contrast, exposition, summary-analysis, argumentation, and problem-solution. A writing process approach with peer response as an integral component was adopted in this class. Before conducting the first computer-mediated peer response (CMPR) task, the instructor explained the rationale for peer response and the steps to be taken during each task. She emphasized the purpose of improving writing skills through peer response in terms of exchanging peer feedback on the content, organization, structure, and usage, as well as the format of peer writing and thoughtfully using the feedback for revision to achieve increased effectiveness in writing. The instructor made it clear that feedback would consist of comments on various aspects of peer writing as well as suggestions for revision, and she explained how to provide helpful feedback. A reader's worksheet was also provided to the students to guide them on what feedback to provide.[2] Students also practiced giving feedback on each others' written paragraphs in a face-to-face peer response exercise. In preparation for the CMPR tasks, students who were not familiar with instant messaging were asked to set up an instant messenger account.

For each CMPR task conducted after the students finished the first essay draft in each rhetorical mode, each student was instructed to swap his/her draft with a partner who could be either pre-assigned by the instructor or self-selected by the student. The students would then read through each other's essay and write comments and suggestions on the reader's worksheet, which was a writing evaluation guide developed by the instructor and distributed upon the essay exchange. During the peer response tasks, conducted every two to three weeks via instant messenger, students exchanged and discussed feedback on their partner's essay. A writer's worksheet, which contained similar questions to those in the reader's worksheet, was also provided to help each student writer actively and selectively seek comments and suggestions from their partner. Students were instructed to revise their first draft after each CMPR task and to submit a second draft to the teacher. A total of five peer response tasks were conducted throughout the semester. The first task was conducted face to face in the regular classroom, and the last four, namely CMPR tasks, were conducted in the institute's computer lab.

The study reported below was part of a larger study designed to examine the impact of technology on student participation in peer response. Data provided in this paper were collected from two student participants: Anton, a 23-year-old Belgian woman, and Iron, a 45-year-old Turkish man (pseudonyms are used here). Anton and Iron were selected for the present study because of their differing levels of knowledge of, and experience with, computer tools

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[2] The reader's worksheet provided 16 specific questions for students to consider during peer response. The questions were grouped into 4 different categories: content (5); organization and style (7); punctuation, capitalization, and spelling (2); and references (2). For each question, space was provided for students to indicate 1) whether they found any problems and 2) what they would suggest for revision.

and IM. This knowledge level difference was revealed by the participant's responses to an ethnographic survey. Both Anton and Iron volunteered to participate in the study. Since the study's focus was on the mediation of computer technologies in peer response, and since the two participants in this study only took part in the first three CMPR tasks, data were collected from them only during the first three CMPR sessions.

3.2. Participants

According to the ethnographic survey to be described below, Anton was a 23-year-old Belgian student whose native language was French. She graduated with a bachelor's degree in Economics from a college in Belgium one year before the study began. In order to work in the international trade company owned by her sister-in-law, she came to the U.S. to improve her English. She had no intention to enroll in any other higher- educational institution in the U.S. or in any other English-speaking country. Anton had taken English courses for three years in a high school in Belgium, and most of the instruction she received in Belgium focused on grammar and translation. She was not trained to speak English or to compose academic papers in English. She had never heard of peer response until she was enrolled in an intermediate (Level 3) academic writing course at the ELI in spring 2006, which was also her first semester at the ELI. When Anton joined the ELI in January, 2006, she could not speak English fluently. However, she made dramatic progress in the spring semester. When she started the low-advanced- level academic writing class, she was one of the most proficient students in English speaking and writing. She had no obvious communication problems within or beyond the classroom. Anton had her own computer and reported that she had been using it for more than three years and that she was an enthusiastic CMC user. She used email, public chat rooms, instant messenger, and voice-over-Internet-protocol (VOIP) programs to communicate with her friends and family. The IM tool she usually used most was MSN messenger, which she used daily but only for less than one hour per day. She had never used IM to discuss academic issues with classmates.

The other participant, Iron, was 43 years old when he joined the ELI. He was a financial manager in an international finance auditing company located in Istanbul, Turkey. His native language was Turkish, and he obtained his master's degree from a university in Turkey. He had taken English classes in Turkey for roughly three years. However, he had rich experience with English speakers because of his trips to London for business meetings. Thus, although the summer semester was Iron's first semester at the ELI, he was placed at the low-advanced level. Iron could comprehend, read, and write in English with no significant difficulties, but his speaking ability needed improvement. He reported that his sole purpose at the ELI was to improve his English proficiency. He expected to learn how to express himself in both spoken and written forms in English at the ELI. Iron was a frequent computer user before the course although he only used email to communicate with his colleagues in Turkey and occasionally with colleagues in London. Iron could not type on the computer very quickly, especially in English, because his staff usually typed for him when he was in Turkey. He had neither heard of instant messenger nor participated in any peer response sessions prior to his attendance at the ELI.

3.3. Data collection and analysis

A case study approach was adopted in the study with a focus on Anton and Iron's participation in the three CMPR tasks. Anton and Iron were partners during the first two CMPR tasks, and they were paired with new partners in the third CMPR task. Data were collected with qualitative data collection techniques including 1) an ethnographic survey administered at the beginning of the semester to gather information about the participants' age, cultural background, and prior experience with English academic writing instruction, peer response tasks, as well as computer use. This background information, according to activity theory, could help the researchers understand historical factors that might have shaped Anton and Iron's motives in the CMPR tasks; 2) on-screen behavior observations during each CMPR session; 3) beyond-screen behaviors captured by two digital video cameras and through observation by one of the researchers; 4) three rounds of interviews each conducted after a CMPR session as well as informal interviews conducted during class breaks and through online chat, all concerning students' motives and perceptions of CMPR; 5) reflective journals kept by one of the researchers; and 6) Anton and Iron's first and second drafts of papers. The on-screen behavior data included chat transcripts as well as all mouse-clicking and typing on the computer during the three CMPR sessions, which was captured by the free screen-motion-capturing software Wink 2.0 (DebugMode Inc., 2005). The interview data included the participants' responses to questions eliciting their reflections on what they did

during the task; their purposes for conducting peer response and for certain behaviors during CMPR; and how they interacted with their partner during the peer response task.

As mentioned earlier, knowing motives is instrumental to understanding human activity. However, identifying human motives is by no means a simple matter. To date, no particular method has been proposed as the prototypical method for analyzing human motives when people participate in an activity. Researchers and scholars, however, (e.g. Nardi, 2005; Miettinen, 2005) have mentioned interviews and observations as data sources for this purpose. Following Leont'ev's (1978) definition of motive and using data sources identified as helpful in understanding human motives in activities (Nardi, 2005; Miettinen, 2005), we identified the participants' motives by analyzing information directly from the participants' interviews (i.e. what they thought motivated their behaviors in the CMPR tasks) and by inferring motives from online and offline observations (i.e., what they really did during the tasks), and, if necessary, from other relevant materials such as the students' first and second drafts. It was hoped that the triangulation of direct and indirect information could help us better understand the students' motives in each CMPR task, which in turn would assist us to understand how technology influenced student participation in CMPR. In our analysis, we considered the entire writing class to be driven by an overarching purpose: to develop English academic writing skills.

To examine the role of technology in student participation in CMPR tasks, we first identified the participants' motives, then probed the mediation of technology in the participants' motive formation and shift. A three-step analysis was conducted for each participant to understand the participant's motives. The analysis began with data collected from Anton. In the first step of analysis, transcripts from Anton's interviews following each CMPR task were analyzed to identify her tentative scheme of motives during participation in each CMPR task. The constant comparison method (Lincoln & Guba, 1985) was used to identify and categorize the motives that were expressed explicitly in the interviews. Sentences with key phrases such as "I wanted to. . ." were identified and categorized to analyze what prompted Anton to participate in the task.

In the second step of analysis, Anton's on-screen and off-screen observation data were analyzed to infer the underlying motives that drove her behaviors. To analyze Anton's on-screen behaviors, we segmented Anton's chat transcripts from the three CMPR tasks into e-turns, then numbered the e-turns Anton took during each task, and finally categorized them either as on task (when the turns were devoted to discussing the CMPR task) or off task (when the turns were devoted to topics unrelated to the CMPR task). Following Thorne (2000), we defined an e-turn as "a bounded individual submission to a CACD (computer-assisted classroom discussion) dialogue that takes its final form and placement on the screen." After the e-turns were identified, the number of on- and off-task e-turns Anton contributed during each CMPR task was calculated. On-task e-turns were subsequently coded in terms of their language functions, for example *give opinion*, *ask for suggestion*, and *ask for clarification*. One on-task e-turn might be segmented and coded into multiple language functions. The number of on- and off-task e-turns as well as the functions of the e-turns helped us infer whether Anton was participating in peer response for the purpose of learning or if she was performing the peer response task for other reasons. For example, if Anton's on-task e-turns substantially outnumbered her off-task e-turns and the functions of her on-task e-turns focused on meaningful discussion with Iron, we considered Anton's motive to be improving her writing skill through peer response. We also noted the mouse-clicking activities and analyzed Anton's off-screen behaviors to better understand what she was doing during the CMPR task. A tentative scheme of motives was established based on Anton's on-screen and off-screen behaviors. As part of the data analysis, a revision analysis was conducted, and, when needed, the results of the revision analysis were used to inform and corroborate our analyses based on the interview and observation data.[3]

In the third step of analysis, the motives identified through interview data and observation data were triangulated. If there was inconsistency between Anton's self-reported motive and her motive as constructed based on the observation data, both the interview data related to the self-reported motive and the observation data were constantly compared and contrasted to see whether Anton shifted her motive during the task or if she did not report a motive in the interview. In a few cases, we noted more motives from the observation data than reported by Anton in the interviews. This is not surprising given that humans may not always be conscious of their motives (Lantolf & Thorne, 2006) and that

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[3] A descriptive revision analysis was performed by comparing each student's first draft with the second draft produced after each CMPR task. The purpose of the descriptive revision analysis was to identify what revisions each participant made in the second draft and the stimulus for each revision. The revision analysis was used as one additional data source to assess the participants' attitude toward peer feedback and to infer their motives for participation in CMPR. A revision rubric, adapted from Chris Hall (1990), was used to facilitate the analysis.

Anton might not want to report a motive to the interviewer, who was also her instructor. Motives identified based on the observation data were included in the results section if they could be triangulated within the multiple sources of observation data (i.e., beyond-screen and on-screen observations).

After the analysis was completed with data from Anton, all three steps as described above were applied to data collected from Iron. As indicated in the description of the three steps above, the process of identifying the participants' motives was not linear, simple, nor straightforward. Rather, it was a recursive, complex, and interpretative process.

After the participants' motives were identified, the motives were reviewed along with the raw data to probe whether and how the use of IM played a role in Anton and Iron's motive formation and shift. The identified motives were reviewed to see whether any new motive emerged because of the availability of IM. Drawing from data already analyzed, we also explored how Anton and Iron's use of IM impacted their interaction, which, in turn, affected their motive shift within and across tasks.

4. Findings

4.1. Anton and Iron's Motives in Three CMPR Tasks

According to activity theory, activities are driven by motives, which in turn are realized in goal-directed actions. Students who participate in a learning task may be driven by different motives and, as a result, may obtain different levels of development (Lantolf & Thorne, 2006). Further, students' motives are not static and may be influenced and reshaped in different physical environments. By analyzing data from multiple sources, we identified Anton and Iron's motives, namely, the activity systems they respectively were engaged in when participating in each CMPR task. This section first presents the identified motives for each participant and then a discussion on how the use of instant messenger influenced Anton and Iron's motive formation and shift.

4.1.1. Anton's Motives in CMPR Tasks

The first CMPR task was conducted in week six. During this task, Anton collaborated with Iron. Regarding her motive, Anton revealed in the interview that "I never took academic writing class before. Yes, I want to know how to write expository essays" (interview with Anton, 6/25/06). Anton's motive to learn was reflected in her comments on what she did with Iron's feedback: "Iron told me I had problems in my introduction paragraph. So I rewrote my thesis statement and added new information. I also changed some phrases and words because I feel these new words are clearer and better" (interview with Anton, 6/25/06). Anton's comments indicate that Anton took the CMPR task and Iron's comments seriously and was interested in improving her writing through collaborating with Iron. The revision analysis revealed that Anton incorporated Iron's feedback in her revision and made the changes that she reported during the interview.

The data of Anton's beyond-screen behaviors (Appendix A) showed that she concentrated on the online interaction throughout the task. This was reflected in several ways: 1) she did not have any verbal interaction with other students and the instructor during the task, and the only verbal interaction that she had with Iron was during her return of Iron's essay at the end of the session; 2) she was intensely typing and reading messages on the screen and occasionally paused to check Iron's essay, which, as she explained in the follow-up interview, was undertaken to look for more aspects to comment on and to ensure the appropriateness of her comments; and 3) she occasionally glanced over at Iron to check whether he was on task.

Her on-screen behavior recordings (Appendix B) also showed that Anton did not chat on any off-task topic throughout this task. Anton produced a total of 26 e-turns during the first CMPR task, and all of the e-turns were on task. During the chat, Anton made comments in the areas of content, organization, format, and references in Iron's essay. She also asked Iron to provide feedback on her essay. When Iron pointed out some weaknesses in the essay's organization, Anton actively sought suggestions from him.

As shown in the chat transcript (see Excerpt 1 for an example), during her message exchange with Iron, Anton used various language functions to fulfill her roles as a writer and a reader such as *give opinion/suggestion*, *ask for opinion/suggestion*, *structure*, and *ask for clarification*. In the following excerpt, Anton provided feedback and asked for Iron's comments on her essay. The number in front of Anton or Iron's name indicates the number of the e-turn that the student was taking.

Excerpt 1:

Anton says: So, Iron. . .. Your writing is well-organized and very interesting. . . I have nothing very important to tell you actually. . .. But, this is a peer review. . . so I will try to help you to do better than you do!

Anton says: First, concerning the format of the paragraph. . . You have to know that in an academic writing, you have to follow certain rules.

Anton says: Don not use Bold

Anton says: No space between paragraph (only indent)

Anton says: Also, the line spacing is double and not single

Iron says: I am reading your essay about learning style now.

. . .

Anton says: Can you tell me what you think of my essay?

In all, the interview transcript as well as Anton's beyond- and on-screen behaviors indicate that in the first CMPR task Anton was driven by a motive of improving her writing skills in an expository essay through peer feedback. This motive was maintained throughout her participation in the task.

For the second CMPR task conducted in week eight, Anton's behaviors deviated dramatically from her behaviors in the first task. During the interview conducted after the second CMPR task, she confessed the difficulties that she experienced with Iron during the task, mentioning in particular Iron's lack of experience with instant messaging: "Iron didn't know how to use instant messenger. He is so slow. His English is not bad. But he doesn't know how to help me. . ." (interview with Anton, 7/17/06). In an informal IM chat with the course instructor after the task, Anton also revealed that "I don't like talking to Iron on messenger because it is boring to talk to him. He doesn't know how to use the smiley faces on messenger" (informal interview with Anton, 7/18/06). This indicates that from Anton's perspective, Iron's lack of skills in IM communication affected their interaction.[4] When asked whether she wanted to collaborate with Iron again in the following CMPR task, Anton expressed explicitly, "I don't want to. But if you want me to, I can. But I don't think that will help anyone" (IM chat with Anton, 7/18/06). This shows that Anton lost interest in collaborating with Iron, and she would conduct the next CMPR task with Iron only because she wanted to please the instructor, which hinted at her motive shift in the second CMPR task.

The observation data indicated two emergent motives during the task. The beyond-screen behavior recordings (Appendix A) showed that although Anton performed the peer response task by completing the reader's worksheet, checking Iron's essay, and chatting with Iron, she did not concentrate on her online interaction. She was constantly checking whether the instructor was looking at her before putting on her earphone set, and she immediately took off the earphone set when she noticed the instructor was approaching her area. Anton also chatted briefly with her neighbor for information about online music, and she stuck her tongue out and made faces toward the camera several times when she noticed nobody was looking at her. All these behaviors indicate that she was not genuinely participating in the online interaction with Iron.

The on-screen behavior recordings (Appendix B) further verified that during the second CMPR task, Anton was not participating in the learning activity system as the instructor expected. While chatting with Iron on her essay, Anton opened three more IM chat windows and browsed several music web sites throughout the lab time. In other words, she was simultaneously chatting with four persons: with Iron on the peer response task, with an online friend on topics irrelevant to the course, and with two classmates, Diane and Jillil, respectively, on off-task topics relevant to the course. While Anton might have been reluctant to reveal to the researcher who conducted the interview her motives for participating in this task, she shared them with one of her online friends during the CMPR task: "I am here just to be a good student. . . Let's just have some fun here." When she chatted online with Diane, she complained about how boring and unhelpful her partner Iron was and said that she did not want to work on the task with him. Then, she started to play an online poker game with Diane. When she chatted with Jillil, he suggested that Anton visit an online

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[4] Anton did not complain about the quality of Iron's feedback during the interview after the second CMPR task.

music website. Anton immediately started browsing the web site sent by Jillil and only put on her earphones when she noticed that the instructor was not looking in her direction.

In her chat with Iron, Anton only produced nine e-turns, among which seven were on task and two were off task. In the seven on-task e-turns, she rejected all the opinions and suggestions that Iron gave about her essay and explicitly expressed her resentment toward his comments, as shown in Excerpt 2 from the chat transcript. Although Iron's comments were relevant and might have prompted other writers to seek further clarifications and suggestions for revision, Anton refused to consider them. In addition, Anton did not provide any comments or suggestions on Iron's essay. Anton's messages to Iron later during this exchange suggest that she resented the manner in which Iron provided feedback via the instant messenger. This point will be discussed further in the section on Iron's motives.

> Excerpt 2:
>
> Iron says: Firstly, You have chosen very intresting subject, but I don't agree with your analysis approch and your idea.
>
> Anton says: Iron. . . You shoudn't make any judgement concerning my ideas
>
> Anton says: The work consists in helping in wrting better
>
> Anton says: Therefore, I will ask you not to say things like that
>
> Anton says: they don't inprove my writing

The observations and analyses indicate that Anton was not truly participating in the activity system oriented toward using peer response to gain knowledge and skills relevant to writing a summary-analysis essay. Although Anton did not truly participate, she sat in the lab and appeared to be conducting the CMPR task by chatting with her partner and checking the essay. Data analysis indicated that Anton was driven by two alternative motives in this task. The first was to maintain her good-student image, which was revealed in her messages to her online friend and reflected in her behaviors to comply with the CMPR procedures (i.e., checking the essay and completing the reader's worksheet). Her second motive was to have fun with her friends online. Neither of her two motives was congruent with the expectation conveyed by the instructor. Between these two motives, the first one seemed to be the primary motive that drove Anton to come to class to participate in the CMPR task. During the CMPR task, she realized that she could simultaneously chat with her friends to kill some time in class, which stimulated her second motive.

In the third CMPR task, Anton was paired with Diane. In the interview, Anton explicitly expressed that "Diane is my good friend. I know she needs help. I want to help her. I think her English is good too. We can help each other" (interview with Anton, 7/23/06). Her interview comments indicate that Anton was motivated to help Diane and improve her own writing through collaboration in the third CMPR task. The beyond-screen behavior recordings (Appendix A) showed that Anton had no interaction with the instructor and only had two brief (less than two minutes) verbal interactions with her classmates during the task. The first brief verbal interaction was initiated by a classmate who asked how things were going with her when he passed by Anton's computer desk. The other brief talk occurred between Anton and her partner Diane in the middle of their IM chat when Diane stepped over to ask if Anton had a hard copy of her essay.[5] After the exchange, Anton started reading Diane's essay carefully to identify and mark grammatical errors on the paper.

The on-screen behavior recordings (Appendix B) revealed that Anton was not only participating in the CMPR task with Diane, but also actively involved in another IM chat. In her interaction with Diane, Anton was very engaged, which was demonstrated by both the number of e-turns produced and the range of language functions used. She produced a total of 46 e-turns, 34 of which were on task and 12 were off task. Among the 34 on-task e-turns, Anton used language functions such as *structure*, *give opinion/suggestion*, *ask for suggestion*, *indicate intention*, *clarify*, and *ask for clarification* while playing her roles as a critical reader and a self-reflective writer. She also structured the conversation proactively by suggesting what Diane and she could do to optimize the efficiency of peer response at both the beginning and the end of the task.

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[5] The IM chat transcript revealed that neither Anton nor Diane printed out a hard copy of each other's essay. Instead, they exchanged drafts via email the day before the CMPR task. Both Anton and Diane found it difficult to discuss grammar issues via IM chat, so they decided to print out hard copies and mark the grammar mistakes directly on the paper. Diane printed out her own essay and walked over to exchange her essay with Anton's.

The interview and observation data indicate that in the third CMPR task, Anton was driven by the motive of improving both her and her partner's writing skills in an argumentative essay through peer response. However, Anton's observation data also indicate that she was simultaneously driven by an additional motive: having fun in IM chat. The on-screen behavior recordings showed that as soon as Anton logged onto the messenger and started chatting with Diane, she opened another IM chat window and initiated a conversation with an online friend. The beyond-screen behavior recordings showed that Anton was smiling all the time while chatting with both Diane and this online friend. In addition, Anton constantly checked the screen to see whether her online friend sent her new messages even when she was editing the grammar mistakes in Diane's essay.

The analyses presented above indicate that Anton held heterogeneous motives within and across CMPR tasks. Anton's motive shift throughout the three CMPR tasks is illustrated below:

Improving writing skills in expository essay	→	Maintaining a good-student image Having fun in IM chat	→	Improving writing skills in argumentative essay Having fun in IM chat
1st CMPR		2nd CMPR		3rd CMPR

4.1.2. Iron's Motives in the CMPR Tasks

Iron was a very dedicated student for the entire semester. However, his motives of participating in the CMPR tasks were not always congruent with his partners' motives, and his motives shifted chronologically as well. The first CMPR task was Iron's very first time conducting online chat, and he was not skilled at typing on the keyboard. Before the CMPR session, the instructor helped him register a new MSN instant messenger account and showed Iron how to find his partner on his MSN buddy list and to chat with her.

In the interview, Iron said, "I don't know anything about academic writing. In Turkey, I only learn grammar. I don't know many things we learn here. That is why I am here" (interview with Iron, 6/21/06). This clearly stated Iron's motive to improve his academic writing when he joined the class. His comment on the first CMPR task was, "I don't know about expository essay. I want to improve my writing," which indicated his motive to improve his writing through the first CMPR task.

Iron's beyond-screen behavior recordings (Appendix A) showed that throughout the entire CMPR session, he did not have any other behaviors beside reading messages on the screen, typing on the keyboard, and occasionally checking his partner's essay and the CMPR worksheet given by the instructor. Iron's on-screen behavior recordings (Appendix B) confirmed his devotion to this task. All his contributions in the online chat were task-related although he only contributed a total of 14 turns due to his lack of typing skills. During the CMPR chat, the language functions that Iron employed included *greetings*, *express intention*, *give opinion*, *give suggestion*, *agree*, *phatic*, and *inform action*. Further, Iron did not chat with anyone else. Although he was very slow at typing, Iron managed to offer some feedback on Anton's essay. Using the CMPR reader's worksheet, he pinpointed some weaknesses in Anton's essay: her thesis statement was too broad and her conclusion paragraph was weak. During the chat, Iron's partner Anton suggested that he follow the academic writing format such as space between lines and paragraphs, provide reference information for the data he cited, and balance the information discussed in the introduction and conclusion paragraphs. Iron incorporated most of the suggestions in his second draft, which revealed the value he placed on peer feedback for the purpose of improving his writing. Thus, all the data suggest that Iron was genuinely participating in the activity system of learning knowledge and skills of writing an expository essay through computer-mediated peer response.

IM was a completely new tool for Iron. In spite of his efforts, Iron's lack of computer skills created a problem: he and his partner Anton were not able to finish their task. As indicated in the excerpt below, they ran out of time and had to continue the task the following day. Anton was not very happy about this.

Excerpt 3:

Anton says: there are only three minutes left. . ...

Anton says: we are in a hurry!:-p

Anton says: ok. . . so I think we have to leave now. . ...

Anton says: we will continue this conversation tomorrow morning!

In the second CMPR task, Iron was paired with Anton again. However, he seemed to be driven by two divergent motives in this task. When asked what he wanted to achieve in this task, Iron confessed, "I didn't do so well last time because I typed so slowly. I wanted to do better this time. So we could talk more and help each other. Anton has good English" (interview with Iron, 7/13/06). These comments indicate that he was hoping to improve his performance as a CMPR partner. Also, since he obtained some useful feedback from Anton in the first CMPR task and realized that Anton had high English proficiency, he retained faith in the usefulness of this task and was eager to participate in it. However, Iron's desire to improve his writing through CMPR only ended with his disappointment. During the interview conducted after the second CMPR task, Iron complained to the instructor that "Anton didn't give me any comments on my essay. So I didn't get any help from her" (interview with Iron, 7/13/06). His complaint reflected his hope to receive feedback from Anton.

The beyond-screen behavior recordings (Appendix A) showed that Iron again completely concentrated on his chat. When he was waiting for responses from Anton, he constantly compared his comments on Anton's essay with the CMPR worksheet. The on-screen behavior recordings (Appendix B) showed that he initiated the conversation and contributed comments on Anton's essay despite her negative attitude as reflected in the IM chat transcript (see Excerpt 2). Eight out of nine of Iron's e-turns were on task, and the language functions he performed included *give opinion*, *give suggestion*, *indicate intention*, and *agree*. These behaviors and the interview data indicate that Iron was motivated to develop his writing skills by collaborating with his partner in the CMPR task.

On the other hand, the observation data also confirmed Iron's secondary motive: remedying his image as an incompetent CMPR partner due to his lack of computer skills. In the first CMPR task, the chat was constantly led by Anton, who contributed the majority of the e-turns, directed the conversation, and urged Iron to type faster. Iron was not able to finish the chat within class time, which caused the pair to have an additional CMPR session the following day. Worse yet, Anton formed an impression of Iron as an unhelpful partner. Iron seemed to have sensed this and intended to change this impression during the second CMPR chat. His efforts were reflected in three aspects. First, after the first CMPR task, he stayed in the lab to practice typing after class, which enabled him to type faster. Second, he tried to play a more active role in the CMPR task. With his faster typing speed, he initiated the conversation and led most of the topics during the second task, which contrasted with his behaviors during the first task. Last but not least, as shown in Excerpt 4, he defended his image as a competent partner when Anton rejected his comments on her essay. He defended himself by indicating that he was a boss in a big company in Turkey and he could not type fast because his staff did all the typing for him. He brought up this point again in the interview with the instructor. These behaviors indicate that Iron was very self-conscious about his image as a competent partner and did not want to be looked down upon by his partner due to his limited computer skills.

> Excerpt 4:
>
> Anton says: What you say is unreadable. . . and I'm wondering why bcs your essay is sooooooooo clear! there is a contradiction between the way you express yourself on the Internet and the way you write. . ..
>
> Iron says: That is right, I couldn't use internet and competer much quickly. my staff does these things why I don't have free time for chat etc. But I try.

Anton's comments about the contradiction between how Iron expressed himself in instant messaging and how he communicated ideas in his essays suggest a gap between Iron's communicative effectiveness as an IM user and an essay writer. They also suggest that what caused difficulties in Anton and Iron's interaction was not just Iron's lack of typing skills, but also his inability to effectively use IM tools to communicate ideas during CMPR.

It seemed that Iron's motive to develop writing skills through peer collaboration was demolished by Anton's objections during the second CMPR task, which caused his hesitation to wholeheartedly participate in the third CMPR task. Despite his unsuccessful and unhappy experience in the second CMPR task, Iron participated in the third CMPR task without any complaint. He was paired with Nicky, who was his friend. They occasionally chatted during class breaks since they sat close to each other, so Iron knew Nicky's English proficiency. When asked to reflect on his motive for participating in the third CMPR task, Iron revealed that "Nicky needs a lot of help. I can help her. I don't need any help. I am good" (interview with Iron, 7/21/06). The interview data showed that Iron was not particularly excited about getting feedback from Nicky to improve his writing, but he was willing to provide help for Nicky.

According to the beyond-screen behavior recordings (Appendix A), Iron encountered some technical problems when he tried to log onto the MSN messenger at the beginning of the lab time. In contrast to the eagerness he demonstrated

in the first two CMPR tasks to participate in peer interaction, Iron seemed indifferent to conducting the third CMPR task. He did not report his logon problem immediately to the instructor; instead, he began reviewing Nicky's essay and writing down comments on the CMPR worksheet. Until the instructor and Nicky discovered the problem and helped him log in, Iron did not show enthusiasm in conducting the online task. However, while waiting for responses from Nicky after he sent out each message during the chat, Iron was attentive to the task by constantly comparing Nicky's essay and his comments with the CMPR reader's worksheet to "make sure my comments are correct" (interview with Iron, 7/21/06). These behaviors indicate that Iron did not wholeheartedly participate in the CMPR task but tried to comply with the task procedures.

Iron's on-screen behavior recordings (Appendix B) revealed that Iron did not finish reviewing Nicky's essay before the class, and he tried to finish the review before he started to chat. This further verified that he was not eager or ready to participate in the CMPR task. Due to the technical problem he encountered at the beginning of the task, Iron had only 20 minutes to conduct the task. During his chat, Iron contributed eight e-turns and all of them were on task. The language functions that he employed included *ask for suggestion*, *clarify*, *give opinion, give suggestion*, *express intention*, *inform action*, and *ask for permission*. Although at the beginning of the chat Iron asked Nicky to give suggestions on his essay, he was not genuinely motivated to obtain help from Nicky, which was indicated in his interview comments presented earlier. He seemed more concerned about finishing the CMPR task within the allotted time and complying with task procedures, which indicates his motive of maintaining a good student image.

However, this motive started to change toward the end of the task. After hearing some very positive comments from Nicky and her statement that she did not have any further suggestions for him, Iron started providing more detailed comments on her essay. After they ran out of time, Iron suggested they continue the CMPR task during the lunch break. During his interview with the instructor, Iron revealed that he gave his partner more comments in their follow-up peer response. Although he did not obtain any helpful suggestions from his partner, he enjoyed the process very much "because she is willing to learn. Also I am willing (to share)" and because he liked portraying the image of a competent writer who could help Nicky, as indicated in this comment: "I give some suggestions, she will change all of them" (interview with Iron, 7/21/06). Thus, the data indicate that Iron was motivated in the second half of this task to maintain an image of a competent writer by providing help to his partner.

The data analyzed above indicate that Iron was driven by two motives that not only differed qualitatively, but also shifted chronologically. Although he did not explicitly express it, the observation data indicate that at the beginning of the third CMPR task, Iron was interested in maintaining a good-student image by finishing up reviewing Nicky's essay before the chat; sharing his comments and suggestions with Nicky; and politely asking for Nicky's suggestions about his essay–behaviors that were all required by the instructor. After hearing the compliments and appreciative words from his partner, Iron realized that Nicky, unlike Anton, respected his comments; this realization motivated him to provide more detailed suggestions to Nicky and even suggest they have a follow-up discussion during the lunch break. Iron enjoyed the interaction with Nicky even though he did not obtain any constructive feedback from her on his essay, and he enjoyed his image as a competent writer in front of Nicky. Thus, his actions in the second half of the task were driven by the motive of maintaining an image of a competent writer.

Iron's motive shift across the three CMPR tasks is illustrated below:

Improving writing skills in expository essay	→	Improving writing skills in the summary- analysis essay	→	Maintaining a good-student image
		Reshaping his image as an incompetent IM user and partner		Maintaining an image of a competent writer
1st CMPR		2nd CMPR		3rd CMPR

4.2. Mediation of IM in Anton and Iron's Motive Formation and Shift

The analyses presented above and the results from the survey, particularly results about Anton and Iron's respective prior experience with instant messaging, indicate that the use of instant messenger had significant influences on Anton and Iron's participation in the CMPR tasks at the activity level. The influences were reflected in the mediation of the instant messenger in Anton and Iron's motive formation and shift.

In a traditional peer response task, students collaborate with each other by verbally exchanging comments on each other's essays. However, when the collaboration is moved to the Internet, the change of the interaction environment may trigger and nurture new motives as well as abolish existing ones. For example, during the second CMPR task, Anton discovered that she could chat with her friends online simultaneously when she was working on the CMPR task with her partner Iron. Anton started participating simultaneously in two activity systems, and her participation in the activity driven by the motive of "having fun in IM chat" would not have been possible without the use of IM. In the third CMPR task, Anton was immediately engaged in two activity systems: improving writing skills in the argumentative essay and having fun in IM chat. It seems that the use of IM not only stimulated the emergence of an additional activity system, but also afforded its maintenance. Further, the use of IM played an additional role in mediating motive formation and shift through its capacity to influence participants' experience and interaction. In particular, Iron's lack of knowledge and experience with IM affected his interaction with Anton, which in turn mediated the formation of new motives and abolishment of old motives for both participants. More specifically, Iron's image of being a competent collaborator, which he firmly believed in at the beginning of the first CMPR task, was smeared due to his clumsy online performance caused by his lack of IM chatting experience and poor typing skills. A new motive thus emerged when he participated in the second CMPR task: changing his image of being a dysfunctional CMPR partner.

On the other hand, the use of IM also distracted students from existing activity systems. For example, in the first CMPR task, Anton was driven by the motive of learning writing through collaborating with her partner but realized that her partner could not type quickly and could not provide feedback efficiently online. Anton also realized that she could participate in an alternative activity system. As a result, Anton withdrew from the activity system of improving writing through CMPR when she participated in her second CMPR task.

In addition to allowing participants to join in new IM- afforded activity systems and to withdraw from previous activity systems across different learning tasks, the use of IM also enabled participants to shift between activity systems within one learning task. For example, during the third CMPR task, Anton participated in the activity of improving writing through peer collaboration at one moment but switched to the activity of having fun in IM chat the next moment. All these could happen smoothly without disturbing other community members in each activity system because of the online interaction afforded by IM.

In sum, in the present study, the use of IM not only triggered the formation of new motives within and across learning tasks but also afforded flexible motive shift among the activity systems within and across tasks. To some extent, this augmented participants' agency by affording a variety of interaction venues (Vygotsky, 1978) in learning processes. In other words, the students had more freedom to decide which activity system they wanted to participate in at a given moment.

5. Discussion

The study reported in this article investigated the influence of technology on two ESL students' participation in three CMPR tasks using the lens of activity theory. A particular contribution of the reported study lies in the insight it provides on student motive formation and shift within and across CMPR tasks as well as on the mediating role of technology in this process. Analyzing Anton and Iron's participation from an activity theoretical perspective (Leont'ev, 1978, 1981), we discovered that Anton and Iron were often driven by multiple heterogeneous motives that were triggered and maintained by the use of technology and their previous experience with the technological tool. As shown in our analyses, the IM tool played an important role in mediating Anton and Iron's motive formation and shift.

The integration of computer technologies into peer response tasks has significantly changed the physical conditions of the CMPR task. As pointed out by some activity theory researchers and computer-human interaction researchers inspired by activity theory (e.g., Kuutti, 1996), changes at the operation level, meaning the physical environment, cause changes at the activity level. In this study, conducting peer response in the IM-mediated environment stimulated discrete motives that may otherwise not exist in a face-to-face peer response task. Additionally, the power of different motives in different learning tasks may shift due to both the opportunities afforded and challenges presented by the use of IM. For example, in the first CMPR task, Anton was motivated to improve her writing skills. This changed in the second CMPR task, during which Anton was driven by the motive to have fun in IM chat because the use of IM allowed her to escape from collaborating with Iron. Also, instant messenger use stimulated motive formation and shift because the demands associated with the use of IM presented challenges that had to be addressed. The emergence of Iron's motive to remedy his image as an incompetent CMPR partner in the second task reflected this type of mediation.

The IM mediation of Anton and Iron's motive formation and shift is also attributed to their divergent prior experience with the use of IM. In other words, the mediation of tools is not only situated in the current social cultural context, but also closely intertwined with each participant's history with it. Anton had used IM frequently prior to her participation in the CMPR tasks. Therefore, she could not tolerate Iron's slowness and lack of IM chat skills while conducting online interaction, which caused her to withdraw from the expected learning activity system as well as to become involved in an alternative activity system supported by the use of IM. In contrast, Iron had never used IM before. His anxiety and eagerness to become skillful at IM chat amplified the challenges caused by the use of IM as a communication tool in peer response. Due to his lack of experience with IM and his negative experience with Anton, Iron formed a new motive to change his image as an incompetent IM user and CMPR partner in the second CMPR task.

As shown in our analyses, the use of IM in the peer response tasks caused conflicts and tensions in Anton and Iron's partnership as well as between the different motives that Anton and Iron respectively held in the CMPR tasks. According to activity theory (Engeström, 1987; Engeström, 1999; Thorne, 2004), each person engaged in an activity system is constantly communicating with other components such as other members in the same system and the tools used to help achieve the object. Contradictions and conflicts often occur during those interactions, but they also trigger development. In other words, development results from the learners' being actively engaged in seeking appropriate solutions to the conflicts and contradictions. There was some evidence of this development process in Iron's participation in the second CMPR task. Due to Iron's lack of IM chat and typing skills, online interaction-related conflicts emerged between Anton and Iron, and these conflicts were amplified during the second CMPR task. Anton did not actively seek solutions to reduce the conflicts. On the contrary, she resented further collaboration with Iron online by sending unfriendly and even humiliating messages to him during the second CMPR task. Thus, Anton did not successfully resolve the conflicts between her and Iron. In contrast, Iron realized his lack of computer skills and the problem it caused in the first CMPR task. In response, Iron made efforts to resolve those conflicts before and during the second CMPR task. He spent a great amount of time in the lab practicing typing on the keyboard with help from the instructor and classmates. During the second CMPR session, he tried very hard to initiate the majority of the topics despite Anton's negative attitude toward his suggestions. Although Iron did not obtain help from Anton as he expected, he did improve his typing skills and his participation in the second CMPR task as a result of his efforts to seek solutions to the conflicts.

There was one more contradiction between the participants' individual motives, such as having fun in IM chat, and the task's purpose of improving writing skills in a certain writing style through CMPR. However, due to the disguise afforded by online interaction, the instructor was not able to identify the students' off-task activity systems in a timely manner. This contradiction was resolved by neither the students nor the instructor, which may have aggravated the collaboration failure between Anton and Iron in the second CMPR task.

Our study indicates that the integration of technology into peer response tasks can add to the complexity of such tasks. Face-to-face peer response is already a complex task influenced by a wide array of factors such as the participants' language proficiency, interpersonal skills, and ability to comment on peer writing. CMPR introduces yet another variable that may affect student performance of the task: participants' computer-related skills. In our study, Anton and Iron's interaction was evidently influenced by Iron's lack of experience with the technological tool used. Anton used computer skills as one criterion for assessing Iron's competence as a CMPR partner, and the result of her assessment influenced her participation in the second CMPR task. By rendering the participants' technological skills a necessary condition for the successful performance of peer response tasks, computer-mediated peer response introduces new challenges that must be addressed in order for students to fully benefit from peer response.

Our study suggests interesting connections between students' motives and findings reported in peer response research concerning student revision (e.g., Paulus, 1999) as well as interaction during peer response (e.g., Lockhart & Ng, 1995). Our analyses show that when the learners' motives for participating in a peer response task are consistent with each other and with the purpose of the task, learners are more likely to consider peer feedback for revision and to enjoy the instructional benefits of the task. For example, during the first CMPR task, Anton and Iron's motives were not only compatible with each other but were also consistent with the purpose of the task. They exchanged feedback and, similar to the participants in studies that revealed the positive impact of peer response on student revision (e, g., Paulus, 1999), incorporated peer feedback in their revisions. On the other hand, when participants' motives are not compatible with each other nor with the purpose of the peer response task, writing improvement through discussion and revision of drafts may not occur, as shown in Anton and Iron's experience during the second CMPR task. Further, our study indicates that student interaction during peer response may influence and be influenced by students' motives for participating in a peer response task. Anton and Iron's experience during the first two CMPR tasks indicates a

bi-directional relationship between student motive and interaction. An understanding of this dynamic relationship, we hope, may inform future research on CMPR processes.

In all, findings of this study show that the use of IM in peer response tasks influenced students' motive formation and shift. In addition, the mediation of instant messenger is historically dynamic (Engeström, 1987). In our study, because each student bore differing prior experience with the instant messenger, each student was usually driven by multiple and heterogeneous motives triggered by the adoption of the instant messenger. In particular, depending on an ESL student's prior experience with the instant messenger, the student may make decisions about how to use the instant messenger in various learning tasks. In addition, students' prior and current experiences with IM use during each CMPR task may also cause conflicts among different motives held by different members in the same task. Only the students who actively seek solutions to the conflicts can experience development.

6. Conclusion and Implications

In this study, we adopted Leont'ev's (1978, 1981) concepts of motive/object and acknowledged the notion of poly-motivated activities to understand what motives two ESL students had while participating in computer-mediate peer response tasks. We also used important constructs from the third generation of activity theory (Engeström, 1987; Engeström, 1999) such as conflict and contradiction to shed light on student development as a result of participation in computer-mediated peer response activities. At a time when computer-mediated communication is becoming an influential social interaction practice in society and is increasingly integrated into learning tasks such as peer response in the writing classroom, understanding students' motives when performing computer-mediated learning tasks becomes essential for teachers to understand student task engagement and to support student development. However, identifying an individual's motives is not a simple task. We hope that the method used in this study sheds some light on analyzing students' motives in a learning task, particularly in a computer-mediated learning task. It is also hoped that researchers will continue to explore the research methodology that may allow for a better understanding of learner motives in computer-mediated writing tasks.

A few modern activity theory researchers (e.g. Kaptelinin, 2005; Nardi, 2005) find it ambiguous and potentially problematic when object and motive are conflated in analyzing poly-motivated activities because it cannot explain how multiple motives in one activity system work together to direct the activity. To address this issue, Kaptelinin (2005) proposes distinguishing objects from motives. According to Kaptelinin, one activity can be motivated by multiple motives yet only be structured and directed by one object, which may be constructed and redefined due to the changes in the tools used and people involved in the activity. The notion of motive versus object is very attractive for a deeper understanding of what directs learners in a learning task. We hope that future studies will be conducted to examine how the object directs learner behaviors in CMPR and other computer-mediated writing tasks.

This study unveiled that tools, specifically computer tools, could cast a significant influence on students' motives and behaviors. It also disclosed the historically dynamic relationship between the use of instant messenger and ESL students' motives. Computer-mediated peer response may still be a new learning task for many ESL students. While it may have great potential as a learning task aimed at supporting student writing improvement, it may cause difficulties for students who have no prior experience with peer response and computer technologies.

Because only two cases were examined in the present study, the findings are by no means intended to address all issues experienced by all students in online ESL peer response. However, it is hoped that the study sheds some light on the pedagogical concerns of writing teachers of second-language learners, particularly in terms of developing and planning online peer response and other collaborative tasks. When new technologies are introduced into learning tasks, students' proficiency in employing the technology should be taken into serious consideration. Research examining face-to-face peer response (e.g., Berg, 1999; Stanley, 1992) has revealed that training students for peer response tasks through explaining the purpose of peer response and helping students develop feedback strategies is essential for the success of face-to-face peer response tasks. The findings of this study indicate that in CMPR tasks, teachers also need to make sure that the students have adequate technological skills so that CMPR tasks are successfully performed. Effective training in the technology area, however, should go beyond simply helping students acquire general technological skills to focusing on helping students develop skills and strategies for using technology specifically for the purpose of exchanging and negotiating peer feedback.

Results of the present study indicate that during a CMPR task, students may not participate in the learning activity system in which the teacher expects them to participate. The study further indicates that integration of technology in peer response tasks may create tensions and contradictions between participants in the same learning task when student participants do not possess the relevant skills. Therefore, it is paramount for teachers to be aware of the activities that the students participate in as well as the tensions and contradictions that emerge within and between activity systems. To make CMPR tasks conducive to learning and development, teachers need to play an important role in guiding students in their efforts to resolve the tensions and contradictions that occur due to computer technologies and the presence of divergent learner motives. More specifically, teachers need to help students understand that their peers may have differing levels of proficiency with technology and caution students against judging their peers' competence as writers and peer response partners based solely on their computer skills. Teachers also need to help students develop effective online communication strategies as well as strategies for resolving contradictions. According to activity theory, all human practices contain tensions and contradictions, which are triggered by the constant interactions between the human subjects, the tools used, and the community members involved in an activity. Only through participants' actively seeking solutions to the tensions and contradictions can development occur. Thus, a teacher who is ready to provide helpful guidance on resolving technology-triggered human tensions and contradictions within and across activity systems is instrumental for a successful computer-mediated peer response task.

As more and more computer-mediated communication tools such as blogs, Wikis, and Facebook are becoming the social communication norm in modern society, it can be expected that they will be integrated into the first- and second-language writing classroom. However, taking advantage of these emerging and popular tools to achieve academic objectives requires a deeper understanding of students' needs, motives, and learning behaviors. We hope that more research examining how technology influences writing will be conducted to allow a better understanding of the complex and dynamic writing process students go through when performing computer-mediated writing tasks.

Acknowledgements

Appendix A.

Beyond-Screen Behavior Matrix
Beyond-screen Behaviors Matrix: 1st CMPR Task

Participant	Interaction with the Instructor	Verbal interaction with peers	Body movement	Facial expression
Anton	Informed the instructor of her situation at the end of task	Returned Iron's paper at the end of task	1.concentrated on typing; 2.checked Iron's essay; 3. paused to wait for response; 4.checked Iron's behaviors	smiled once
Iron	none	1.Chatted with Anton shortly at the beginning; 2.chatted with Anton at the end of task	1.concentrated on typing with one hand; 2. checked Anton's essay, CMPR worksheets and teaching materials; 3. typed with one hand; 4.wrote down words on the worksheet	smiled while reading a message

Beyond-screen Behaviors Matrix: 2nd CMPR Task

Participant	Interaction with the Instructor	Verbal interaction with peers	Body movement	Facial expression
Anton	Came late and obtained instruction about the task	1.checked whether Iron was online; 2. chatted briefly with neighbors at the beginning of the task; 3. confirmed a web link with a neighbor	1.Checked Iron's status; 2.looked at her essay to check the appropriateness of Iron's comments; 3.filled up the reader's worksheet; 4.marked down mistakes in Iron's essay 5. checked the location of the instructor; 6. put on earphones to listen to music	1.smiled constantly and laughed a couple of times; 2. made faces toward other students
Iron	none	none	1.typed intensively with both hands; 2.compared the essay with the worksheet while waiting for responses; 3. paused to read the essay and wrote down notes on the worksheet	Serious looking, frowned occasionally

Beyond-Screen Behaviors Matrix-3rd CMPR Task

Participant	Interaction with the Instructor	Verbal interaction with peers	Body Movement	Facial expression
Anton	none	1.briefly chatted with classmates passing by; 2.talked to Diane about the essay and exchanged her essay	1.smiled at other students in the lab and listened to their talk; 2. read Diane's essay and constantly checked the messenger while waiting for response; 3. read messages on the screen for a long time.	Smiled for the majority of time
Iron	spent ample time logging into IM with the help from the instructor	Informed Nicky of what problem he had and what he was doing when Nicky checked	1. read Nicky's essay while the instructor was helping him solve the problem; 2. constantly checked the CMPR worksheet; 3. typed intensively when the IM was on; 4. constantly checked Nicky's essay, the worksheet, and the instant messages.	Constantly smiled in chat

Appendix B.

On-screen Behavior Matrix
On-screen Behavior Matrix: 1st CMPR Task

Participant	On-task/Off-task e-turns	Language Function	Emoticon use	Online Resource checking	Multiple chat windows	Notes
Anton	26/0	Greeting: 2 Compliment: 2 Give suggestion: 8 Indicate intention: 1 Phatic: 5 Structure: 5 Ask suggestion: 2 Express appreciation: Ask clarification: 1	4	none	none	Anton initiated most topics.
Iron	14/0	Greeting: 2 Indicate intention: 3 Give suggestion: 3 Give opinion: 3 Phatic: 1 Agree: 1 Inform action: 1	none	none	none	

On-screen Behavior Matrix: 2nd CMPR Task

Participant	On-task/Off-task e-turns	Language Functions	Emoticon use	Online Resource checking	Multiple Chat windows	Notes
Anton	7/2	Disagree: 5 Phatic: 1 Clarification request: 1	none	1.Check email 2. Check online music video 3. online poker	3 other windows	Initiated 2 chat windows
Iron	8/1	Give opinion: 4 Give suggestion: 2 Indicate intention: 2 Clarify: 2 Agree: 1	none	none	none	Initiated chat with Anton

On-screen Behavior Matrix–3rd CMPR Task

Participant	On-task/Off-task e-turns	Language Function	Emoticon use	Online Resource checking	Multiple Chat windows	Notes
Anton	34/12	Structure: 3 Express intention: 1 Indicate difficulty: 2 Compliment: 6 Give opinion: 1 Disagree: 1 Agree: 2 Give suggestion: 4 Ask for suggestion: 1 Clarify: 5 Clarify request: 1 Encourage: 2 Self-correct lapse: 1 Self-identify problem: 1 Express gratitude: 1 Phatic: 7	7(happy, unhappy, "you got it", wink) Phatic	None	2 windows: one with online friend, the other with a classmate	Initiated one off-task window; Initiated chat with Diane
Iron	8/0	Greeting: 1 Inform action: 1 Ask suggestion: 1 Express intention: 1 Give opinion: 1 Give suggestion: 2 Clarify: 1 Ask for permission to give suggestion: 1	none	none	none	Spent long time logging into MSN IM, then changed to Yahoo!

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