

Cooperative Learning Methods and the Teaching of English Writing: Peer Response

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The purpose of this article is to review the literature on the use of one cooperative learning method, peer response, in second language (L2) writing classrooms in traditional (e.g. pen-and-paper and face-to-face) modes versus computer-based (e.g., synchronous and asynchronous computer-mediated communication) modes. The article addresses the question of what benefits computer-mediated communication (CMC) modes can offer over traditional modes for L2 peer response in terms of students' attitudes about the modes of peer response, quantity of student participation, students' interaction and discussion of comments, and the revision of papers. Current research on both asynchronous and synchronous CMC for peer response is discussed. The article then provides a synthesis of the findings and concludes by providing implications of the research for pedagogy and practical suggestions for implementing the use of CMC in L2 peer response.

■ Introduction

Peer response, also sometimes called peer review, peer feedback, or peer editing, is an activity in which learners take on the role of teachers, editors, or tutors in providing information on each other's writing either through a written, oral, or computer-mediated mode (Liu & Hansen, 2002). Starting in the 1970s, when writing instruction moved from a traditional 'product' view of writing to a process view with multiple drafting and peer feedback across the various drafts, peer response has become an important activity in the writing classroom. In the past few years, the mode of peer response has shifted from a traditional pen-and-paper and/or face-to-face (FF) format to the use of computer-mediated communication (CMC) modes for commenting and discussion. CMC refers to the use of computer networks to create opportunities for learners to interact in either real-time (also called synchronous communication) discussions through chat rooms, MOOs (Multi-user domains object-oriented), and computer programs such as Daedalus Interchange or through a delayed response time frame (also called asynchronous communication) via listservs, bulletin boards, emails, and software programs such as CommonSpace. In both L1 and L2 writing classrooms, teachers and researchers have begun investigating the efficacy of technology on writing instruction, with a special emphasis on the use of CMC modes versus traditional modes for peer response activities. L2 research in this area has focused on students' perceptions about CMC versus traditional modes of peer response (Bloch and Brutt-Griffler, 2001; DiGiovanni & Nagaswami, 2001; Liu and Sadler, 2003; Schultz, 2000), effects of CMC on student participation (e.g., Huang,

1998a, 1998b; Sullivan & Pratt, 1996) and the effects of different modes of CMC (asynchronous vs. synchronous) versus traditional paper-and-pencil and/or FF modes on the type and quality of comments generated during the peer response activity and the effects of these comments on revision (e.g., Bloch & Brutt-Griffler, 2001; Braine, 1997, 2001; Huang, 1998a, 1998b; Liu & Sadler, 2003; Sullivan & Pratt, 1996). These findings offer an important avenue of investigation into the efficacy of CMC not only for L2 (and L1) writing classrooms in terms of the structuring of peer response activities and their effects on writing and language development, but also for L2 researchers in general in terms of the efficacy of CMC for L2 use and development. Therefore, the purpose of this article is to discuss the current research in order to reflect the state-of-the-art of the intersection between CMC and peer response.

■ Current Research on CMC and L2 Peer Response

There have been three main foci in research on CMC and L2 peer response: students' attitudes towards the different modes of peer response (Bloch and Brutt-Griffler, 2001; DiGiovanni and Nagaswami, 2001; Liu and Sadler, 2003; Schultz, 2000); the effect of CMC peer response on the amount of participation by students (e.g., Huang, 1998a, 1998b, Sullivan & Pratt, 1996) and the effects of CMC peer response on the number of comments generated during the peer response task and on revision (e.g., Bloch & Brutt-Griffler, 2001; Braine, 1997, 2001; Huang, 1998a, 1998b; Liu & Sadler, 2003; Sullivan & Pratt, 1996). A synthesis of the main findings from each of these areas of research will be discussed below. Findings from L1

research on CMC and peer response will also be discussed when relevant.

Students' Attitudes towards Modes of Peer Response

Bloch and Brutt-Griffler (2001), DiGiovanni and Nagaswami (2001), Liu and Sadler (2003), and Schultz (2000) incorporated measures of students' attitudes towards modes of peer response in their studies. While Bloch and Brutt-Griffler focused on attitudes towards CommonSpace as a tool for asynchronous CMC, DiGiovanni and Nagaswami, and Schultz focused on synchronous CMC versus FF peer response and Liu and Sadler focused on synchronous modes for commenting and asynchronous modes for responding. The findings are mixed: while Schultz found that students perceived that a FF mode was more helpful than synchronous CMC, DiGiovanni and Nagaswami found the reverse was true; Liu and Sadler found that synchronous CMC was perceived as more enjoyable when compared against asynchronous CMC. Bloch and Brutt-Griffler also found that the type of task affected students' perceptions of asynchronous CMC: commenting on-line rather than reading on-line was favored.

However, as these studies have different foci—synchronous versus FF (DiGiovanni & Nagaswami, 2001; Schultz, 2000), asynchronous versus synchronous CMC (Liu & Sadler, 2003), and asynchronous CMC (Bloch & Brutt-Griffler, 2001), it is difficult to draw conclusions. Overall, it appears that the mode as well as the nature of the task affects students' perceptions of the efficacy of CMC for peer response.

Effect of CMC on Amount of Participation

One area of research that has garnered a lot of attention from L2 (and L1) researchers is the extent to which a CMC mode creates more favorable participation opportunities than traditional classroom settings. The role of CMC as an 'equalizer' in participation—fostering greater participation by less active students; creating a more equal playing field between the teacher and students by lessening a teacher-dominated discussion structure; the "liberation of minorities" (Honeycutt, 2001) in fostering greater participation by members of underrepresented groups; and increasing classroom participation by all learners—has often been cited by researchers (e.g., Beauvois, 1992; Beauvois & Eledge, 1996; Belcher, 1999; Chun, 1994; Fanderclai, 1995; Harris, 1995; Kelm, 1992; Kern, 1995; Reid, 1994; Rheingold, 1993; Sproull & Kiesler, 1991; Warschauer, 1996) as one of the major benefits of utilizing this mode of communication in the language classroom. The findings from this line of research do suggest that CMC modes may promote greater opportunities for interaction by all students, and especially underrepresented or less active students, and that these opportunities may be more favorable for L2 use and development. For example, research has found that the use of CMC may lead to increased opportunities and motivation for meaning negotiation and authentic interaction (Beauvois, 1992; Kern, 1995), greater communication and lowered anxiety

(Beauvois, 1992; Fanderclai, 1995; Harris, 1995; Kern, 1995; Reid, 1994), increased self-confidence and improved linguistic proficiency (Beauvois & Eledge, 1996), more student dominated and less teacher dominated participation (Chun, 1994; Kelm, 1992; Kern, 1995), and increased participation by students who are typically quiet (Belcher, 1999; Kelm, 1992; Kern, 1995; Rheingold, 1993; Sproull & Kiesler, 1991; Warschauer, 1996).

Whereas some research on CMC in L1 composition classrooms corroborates these findings by suggesting that CMC modes of peer response may increase student participation in both synchronous (Bump, 1990) and asynchronous (Crank, 2002) CMC modes, other research from this area also reminds us that CMC modes may not be a panacea for ensuring more and better student participation. As Yagelski and Grabill (1998) and Pagnucci and Mauriello (1999) found, while one of the widely touted benefits of CMC has been that it has an equalizing effect on participation structures in the classroom, it is far from a neutral playing field as gender, racial, and other inequities may be replicated online. Additionally, although research has indicated that teacher participation may decrease online, teacher-dominated discussions can also occur online (Yagelski & Grabill, 1996).

Research in the use of CMC modes for peer response in L2 writing classes has also had mixed findings regarding the efficacy of CMC in generating greater participation than that of traditional classrooms. Two studies (Huang, 1998a; Sullivan & Pratt, 1996) that have examined the use of Daedalus InterChange for synchronous peer response in contrast to an oral mode have conflicting findings. Sullivan and Pratt (1996) found that participation in the CMC peer response activity was much greater than that in the face-to-face mode: while participation in the FF peer response mode was at 50%, it was at 100% in the CMC mode. Additionally, there was less teacher dominance in the CMC activity. In contrast, Huang (1998a) found that in the FF peer response activity, there was more talk overall and more full group participation whereas students in the CMC mode of peer response participated and interacted less. Huang suggests that slow typing speed inhibited full group participation in the CMC groups.

Effect of CMC on Comments and Revision

Another main area of concern of L2 (and L1) researchers in peer response is the efficacy of CMC versus traditional modes on both the type and quality of comments generated during the peer response activity and the results of these comments on revision. The discussion of these findings will be organized by mode of CMC, with an asynchronous mode discussed first, followed by a synchronous mode of peer response.

● **Asynchronous CMC**

Research on asynchronous peer response for L1 courses has found that one of the advantages of this mode is that students can take time to think about their peers'

papers and respond (Thompson, 1993). As Thompson notes, this may make asynchronous CMC a better mode of peer response than synchronous CMC as it “allows students and the teacher to take their time, to read others’ writing at their convenience, and to answer as the spirit moves them. It invites reflection as much as responsiveness” (p. 226). Honeycutt (2001), also on research on CMC in L1 composition courses, also found that an asynchronous mode allowed deeper processing of documents, encouraging students to generate more specific comments, and that students had a preference for email comments by students when revising due to clearer organization and more elaboration. L1 research also suggests that asynchronous peer response allows students to self-initiate criteria for evaluation based on components covered in class. Additionally, an asynchronous mode may engage students in the text as ‘real’ readers (Crank, 2002).

Research from L2 classrooms (e.g., Bloch & Brutt-Griffler, 2001; Liu & Sadler, 2003) also suggests that comments generated in an asynchronous mode may also be more focused on editing and grammatical issues due to software constraints. For example, Bloch and Brutt-Griffler found that comments generated in the traditional pen-and-paper mode were more general in nature while the comments generated via the asynchronous mode with the software program CommonSpace were more detailed. However, while students in the traditional mode read the entire draft first before commenting, students using CommonSpace commented before reading the entire draft as they had difficulty in keeping the entire text in focus as only part of the text was viewable on the screen at a given time, which leads to bottom-up processing. As a result, students using CommonSpace were found to give more grammatical than rhetorical feedback, which was not perceived to be as useful by their peers. However, the researchers also note that comments generated in an asynchronous CMC mode may also be easier to find, read, and use due to highlighting and tracking features of software programs.

Liu and Sadler (2003) found that while there were no differences on the number of content and organization comments by the CMC and the traditional peer response groups, the CMC students had a much larger percentage of editing and grammatical comments than the traditional peer response group. In this study, Microsoft Word was the software program used in the asynchronous mode and the authors suggested that the preponderance of editing and grammatical comments by students in this group was due to the fact that students were able to take advantage of the grammar and spelling checker when reviewing their peers’ papers.

The mode of peer response may also affect the type of feedback and/or questions students give to each other, as Liu and Sadler (2003) found. The researchers grouped the comments made into four general categories: evaluation, clarification, alternation, and suggestions. The largest difference was in the number of alternation comments: for the CMC group, 46.8% of their comments were alternation while for the traditional group, only

7.2% were alternation. As the authors suggest, this may be due to the features of the software program, which allowed students to use a spelling and grammar checker and therefore give specific alternates for change. The second area of difference was on the number of evaluation comments: for the traditional group, evaluation comments accounted for 60% of their overall comments while for the CMC group, only 25% of their comments were evaluative. The researchers suggest that this may be due to the fact that the traditional group tended to stay focused on the response sheet while the CMC group did not focus on the response sheet, but commented (and gave alternatives) in the text. The researchers also investigated whether the comments generated were revision-oriented or non-revision-oriented and found that the CMC group made more revision-oriented comments than the traditional group (e.g., 92% of the comments versus 75.6% of the comments for the traditional group), which the authors suggest may be due to the large number of alternation comments that the CMC group made, almost all of which were revision-oriented.

● Synchronous CMC

While an asynchronous CMC mode has benefits for peer response, the vast amount of research on CMC modes of peer response for both L1 and L2 classrooms has focused on a synchronous mode. This may be in part because, as Honeycutt (2001) explains, it is viewed as promoting “increased student participation...and facilitation of small group discussion” which may outweigh “such disadvantages as reliance on keyboarding, less coherence, and dehumanization because of insufficient voice communication” (p. 27). Additionally, it is viewed as attractive for classroom instruction as it appears to provide a rich environment for collaborative learning (Honeycutt, 2001).

Research on L2 classrooms has focused on whether a traditional or CMC mode promotes a greater amount of comments, with mixed results. Braine (1997), for example, found that students in the CMC peer response sessions generated more than twice the number of comments than students in the traditional class (480 words in the CMC mode versus 197 words in the traditional mode). However, other researchers suggest that typing speed inhibits the amount of commenting and interaction of students in CMC groups (e.g., Huang, 1998a; Liu & Sadler, 2003; Sullivan & Pratt, 1996). Huang (1998a), for example, found that the oral peer response group had more talk overall and therefore more comments for revision. Sullivan and Pratt (1996) also found that the number of turns per group was greater for the oral peer response group as typed comments took longer to produce. Liu and Sadler also found that students in the synchronous discussion had difficulty keeping up with the discussion due to their slow typing speed. Liu and Sadler found that CMC group had a greater number of turns overall (208 to 159 in the oral group) although 141 of these were focused on conversation maintenance. However, when these conversation maintenance

comments were subtracted from the overall total, it was found that the traditional oral group had a greater number of comments overall (91 to 67 for the CMC group).

Similarly to studies on asynchronous peer response, findings suggest that comments in the synchronous CMC activity may be more specific whereas comments generated from traditional peer response modes may be more global and general in nature. Huang (1998b), for example, found that the CMC groups had more discussion of problems in their peers' text and suggestions for revision. As Huang explains, this could be due to students' copying their comments from a written peer response sheet they had filled out beforehand since they had constraints in typing once they were online. Sullivan and Pratt (1996) also found that students in the CMC groups had comments that were more focused and more repetitive as students were sending comments at the same time, which they suggest may actually be beneficial as repetitive comments may be more visible and salient to the writer. Additionally, more concrete suggestions were generated in the CMC groups. Similarly, research on L1 classrooms (e.g., Hewett, 2000) also found that while both the oral peer response and CMC response groups did talk mostly about the writing, students in the oral peer response activity focused mostly on global issues and abstract idea development whereas students in the CMC mode focused their discussion more on group management and concrete writing ideas.

In their comparison of oral versus synchronous CMC (using a MOO) discussion of peer response comments (generated earlier via asynchronous or traditional written modes), Liu and Sadler (2003) found that both the CMC and the oral peer response groups had a greater amount of global over local comments, with a slightly higher percentage of CMC comments focusing on global issues than the oral groups (97% for the CMC group and 86% for the oral group). The authors speculated that the reason both groups had such high numbers of global comments were that they had already discussed local issues via earlier activity in the peer response session (e.g., either via written or asynchronous CMC) and therefore the discussion was more focused on their peers than on the papers they reviewed.

Research also suggests that the actual communication in a synchronous mode may not be on the peer response task per se, but instead has a conversational maintenance and face-saving function. For example, Liu and Sadler (2003) found that over 70% of the CMC comments (versus 40% for the oral peer response groups) could be categorized as conversation maintenance, indicating that the majority of the interaction of the CMC group was not focused on their peers' papers but on the act of communicating in this environment. This is corroborated by research on synchronous peer response in L1 classrooms. Bump (1990), for example, found that in synchronous CMC peer response, students lacked focus, were not always on task, and engaged mostly in social interactions and face-saving behaviors. Kremers (1993) and Thompson (1993) also found that in synchronous

CMC peer response, students were often not on task.

Additionally, research (e.g., Braine, 2001) also suggests that comments generated from a synchronous mode tend to be less organized and less structured due to the overlap in turn-taking and commenting, and to technological problems such as difficulties in logging whereas comments generated in a traditional paper-and-pencil mode may be more organized and systematic and therefore perhaps easier to use for revision.

Software constraints may also affect the extent to which students are able to give comments that lead to revision. For example, Liu and Sadler (2003) found that the oral groups had more revision-oriented comments in their discussion, with 96.7% of the comments generated in this task categorized as revision-oriented while 76.1% of the CMC comments were revision-oriented. The authors suggest that this difference may be based on the constraints of the software. While students in the oral mode had previously done a written peer response task and had hard copies of both their peer response comments and their peers' papers on hand to refer to during the discussion, the CMC group had their peer response comments and their peers' papers on disc and many did not have a hard copy to refer to during the discussion. Even for students who had either printed a hard copy or opened the Microsoft Word program used for commenting had a difficult time referring to the comments and papers during the discussion as they had to pay attention to the synchronous discussion comments on screen and had little time to refer to anything else.

In terms of the results of comments on revision, the findings suggest that a synchronous mode of CMC by itself may not lead to effective revision. Liu and Sadler (2003) found that while the CMC group produced more comments overall and more revision-oriented comments, the actual number of revisions were lower for the CMC group (27% versus 41% for the traditional group), indicating that the comments generated in the CMC mode were less effective for revision. Braine (2001) found that the drafts in the CMC class were originally better than those in the traditional classroom, the students in the traditional classroom showed more improvement in the writing. Braine suggests this may be because the high amount of feedback generated in the CMC class may have overwhelmed writers. These findings led Braine to conclude that CMC is no more effective than traditional peer response.

■ Discussion

The findings from research on CMC and peer response have a number of important implications not only for the use of CMC in writing classrooms, but also for CMC in language classrooms in general. First of all, while a widely-touted benefit of CMC for language classrooms is that CMC is an 'equalizer' by creating more equal participation structures among students and between the teacher and students, research on CMC modes for peer response in L1 and L2 classrooms indicates that CMC modes may not automatically ensure greater participation by all members of a class (Huang, 1998a; Pagnucci &

Mauriello, 1998; Sullivan & Pratt, 1996; Yagelski & Grabill, 1998). As these findings suggest, and as Warschauer (1998) cautions us, we should not view the computer as “an all-powerful machine that in and of itself brings about certain determined results” (p. 758). CMC does not by itself create equality in participation structures; rather, as it is situated within a particular social context—whether within a classroom, or across classes, institutions and even borders—CMC is not immune from the social forces and constraints that operate more visibly in a traditional classroom.

Additionally, the findings from this research area suggest that software constraints and typing skills have a significant impact on the amount of participation by students (e.g., Huang, 1998b; Sullivan & Pratt, 1996), the number of comments students give (Huang, 1998b; Liu & Sadler, 2003; Sullivan & Pratt, 1996), and the focus of students’ comments (Bloch & Brutt-Griffler, 2001; Liu & Sadler, 2003).

Findings also suggest that the mode chosen for a task needs to be connected to the objectives of the peer response task. As some researchers have suggested (e.g., Hewett, 2000; Liu & Sadler, 2003) and as other research findings (e.g., Bloch & Brutt-Griffler, 2001; Honeycutt, 2001; Thompson, 1993) have implied, an asynchronous mode may be better for commenting tasks since it encourages more reflective comments and deeper processing of peers’ text, as well as giving students more time and space to comment versus a synchronous mode of CMC. Comments generated via an asynchronous mode may also be easier to find, read, and use than comments from the traditional pen-and-paper mode.

In terms of a discussion task, the question of whether a synchronous CMC mode or an oral FF mode is more effective is still unclear although research on CMC and peer response (e.g., Hewett, 2000; Liu & Sadler, 2003) suggests that the oral mode may be more effective than the CMC mode. As stated previously, the goal of increasing student participation by utilizing CMC, and especially synchronous CMC, in the language classroom has not been convincingly met in peer response research (e.g., Huang, 1998b; Liu & Sadler, 2003; Sullivan & Pratt, 1996). Additionally, research has indicated that synchronous CMC may foster less focused (Bump, 1990), less structured and clear (Braine, 2001), and more off-task (Kremers, 1993; Thompson, 1993) communication, as well as communication that focuses more on conversational maintenance and face-saving (Bump, 1990; Liu & Sadler, 2003). Finally, research (Braine, 2001; Liu & Sadler, 2003) suggests that comments generated from a synchronous CMC mode may not be effective for revision due to being too focused on grammatical concerns, lacking a clear focus and organizational structure, and being overwhelming in nature due to the high number of comments.

■ Pedagogical Implications

The findings on the efficacy of CMC for writing and language classrooms are preliminary in nature as this mode of communication is still relatively rare in most

classrooms. However, as more and more teachers begin incorporating various technological innovations into their curricula and activities, there is still a question of whether these innovations enhance language learning. As the findings reported here from research on the effects of CMC on one type of language activity—peer response—suggests, CMC activities are not necessarily more effective for all language tasks. Therefore, more research on the efficacy of CMC in language classrooms in general and in peer response in particular is needed.

While the number of studies on CMC in L2 peer response is limited, the available research has shed some light on many important issues on students’ attitudes, interaction and participation, commenting, and revision through CMC. Although the results of the studies reviewed in this paper are still inconclusive, CMC, being synchronous or asynchronous, as a mode of peer response, holds promise not only for further research, but also for improved pedagogical practice. To advance research in this area, guidelines of using CMC in educational practice are essential.

For instance, if a synchronous mode is used, there are a number of ways teachers can minimize the oft-cited concerns of unstructured and unfocused discussion and students being off-task. The two main suggestions to overcome these concerns are to give students sociocultural turn-taking and linguistic guidance (cf. Liu & Hansen, 2002) and to guide them in group management issues. These two objectives can be accomplished in several ways: have students, either as a whole class or in their peer response groups, create group rules for latecomers (e.g., students who have difficulty logging in) and for turn-taking not only in terms of the order in which papers should be discussed, but also for the topic of discussion and for who should ‘talk’ and for how long. It may be more efficient to have each group appoint a topic manager and a turn-taking manager, which can be two separate rotating positions. The topic manager, for example, can monitor the focus of the discussion, ensuring that students are discussing a particular paper and/or a particular aspect of that paper so that the thread of the discussion is not overlapping. The turn-taking manager can ensure that the group rules for discussion are being followed, so that every student has a turn and that there is not too much overlap of students’ discussion. Both will help ensure the discussion is more structured, organized, and on-task.

Another concern about using a synchronous CMC mode is the problem of being able to keep up with the often fast-paced discussion while referencing the text and comments being discussed. The use of signal devices and topic and turn-taking guidelines should help make the synchronous discussion easier to follow so that if students do need to reference their comments on the paper, they should be able to pick up the thread of the discussion easily again. Other suggestions to help minimize problems in this area is to have all students print out hard copies of the papers and their comments and have them readily available next to the computer—this also helps keep the focus on the discussion on task. The group

managers should also ensure that students have sufficient wait time so that when it is their turn to discuss a point, they have time to reference the paper and their comments. Clear signal devices enable all the students in the group to know that it is person A's turn to comment, for example, and that person A needs to be given a few minutes to reference the paper and comments.

Task guidance for the commenting and the discussion activities is also important to ensure that students are on-task. One option is to have students use guided peer response sheets for the commenting activity, a copy of which will later be given to the writer before the discussion via an electronic or hard copy mode, and then for students to use this sheet in the discussion activity as a way to organize the focus of the discussion. Since both the readers and the writer have a copy of the sheet (either a hard copy or an on-line copy, if this can be viewed simultaneously to the synchronous

discussion), the discussion can be used to probe the various comments and to negotiate meaning. Another option is for students to use the peer response sheets in the commenting activity, and then to summarize the comments for the discussion activity. Students can also be asked to respond to their peers' papers using 15 sentences or so (cf. Crank, 2002), which can also be used to generate a discussion and negotiation of meaning of issues.

Finally, flexibility—in mode, focus of task, guidelines, etc.—is the most important component for the successful use of CMC modes for peer response. Back-up plans need to be made in case software programs or computers do not work, the focus of the task needs to be changed if it does not generate beneficial commenting and/or discussion, and group guidelines need to be adjusted as new concerns arise and old concerns disappear.

REFERENCES

- Beauvois, M. (1992). *Computer-assisted classroom discussion in French using networked computers*. Unpublished Ph.D. dissertation, University of Texas at Austin.
- Beauvois, M. H., & Eledge, J. (1996). Personality types and megabytes: Student attitudes toward computer mediated communication (CMC) in the language classroom. *CALICO Journal*, 13, 27-45.
- Belcher, D. (1999). Authentic interaction in a virtual classroom: Leveling the playing field in a graduate seminar. *Computers and Composition*, 16, 253-267.
- Bloch, J., & Brutt-Griffler, J. (2001). Implementing CommonSpace in the ESL composition classroom. In D. Belcher & A. Hirvela (Eds.), *Linking literacies: Perspectives on L2 reading-writing connections* (pp. 309-333). Ann Arbor, MI: University of Michigan Press.
- Braine, G. (1997). Beyond word processing: Networked computers in ESL writing classes. *Computers and Composition*, 14, 45-58.
- Braine, G. (2001). A study of English a foreign language (EFL) writers on a local-area network (LAN) and in traditional classes. *Computers and Composition*, 18, 275-292.
- Bump, J. (1990). Radical changes in class discussion using networking computers. *Computers and the Humanities*, 24, 49-65.
- Chun, D. (1994). Using computer networking to facilitate the acquisition of interactive competence. *System*, 22, 17-33.
- Crank, V. (2002). Asynchronous electronic peer response in a hybrid basic writing classroom. *TETYC (December)*, 145-155.
- DiGiovanni, E., & Nagaswami, G. (2001). Online peer review: An alternative to face-to-face? *ELT Journal*, 55(3), 263-272.
- Fanderclai, T. L. (1995). MUDs in education: New environment, new pedagogies. *Computer-Mediated Communication Magazine*, 2, 8-10.
- Harris, K. (1995, Autumn). Internet in the classroom: A gold mine or a lot of hype? *CALL Review: The Journal of the IATEFL Computer Special Interest Group*. Retrieved from September, 2004, from <http://www.iatefl.org/calrevnv.html>
- Hewett, B.L. (2000). Characteristics of interactive oral and computer-mediated peer group talk and its influence on revision. *Computers and Composition*, 17, 265-288.
- Honeycutt, L. (2001). Comparing e-mail and synchronous conferencing in online peer response. *Written Communication*, 18(1), 26-60.
- Huang, S.Y. (1998a). *A comparison between Chinese EFL students' peer response sessions held on networked computers and those held in a FF setting*. East Lansing, MI: National Center for Research on Teacher Learning. (ERIC Document Reproduction Service No. ED 423 685)
- Huang, S.Y. (1998b). *Differences in the nature of discussion between peer response sessions conducted on networked computers and those conducted in the traditional FF situation*. East Lansing, MI: National Center for Research on Teacher Learning. (ERIC Document Reproduction Service No. ED 423 686)
- Kelm, O. (1992). The use of synchronous computer networks in second language instruction: A preliminary report. *Foreign Language Annals*, 25(5), 441-454.
- Kern, R. G. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and characteristics of language production. *The Modern Language Journal*, 79(4), 457-476.
- Kremers, M. (1993). Student authority and teacher freedom: ENFI at New York Institute of Technology. In B. Bruce, J. K. Peyton, & T. Batson (Eds.), *Network-based classrooms: Promises and realities* (pp. 113-123). New York: Cambridge University Press.
- Liu, J., & Hansen, J. G. (2002). *Peer response in second language writing classrooms*. Ann Arbor: University of Michigan Press.
- Liu, J., & Sadler, R. W. (2003). The effects and affect of peer review in electronic versus traditional modes on L2 writing. *English for Academic Purposes*, 2, 193-227.
- Pagnucci, G. S., & Mauriello, N. (1999). The masquerade: Gender, identity, and writing for the web. *Computers and composition*, 16, 141-151.
- Reid, E. (1994). *Cultural formations in text-based virtual realities*. Unpublished master's thesis, University of Melbourne, Melbourne, Australia.
- Rheingold, H. (1993). A slice of life in my virtual community. In L.M. Harasim (Ed.), *Global networks: Computers and international communication* (pp. 57-80). Cambridge, MA: MIT Press.
- Schultz, J. M. (2000). Computers and collaborative writing in the foreign language curriculum. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 121-150). New York: Cambridge University Press.
- Sproull, L., & Kiesler, S. (1991). *Connections: New ways of working in the networked organization*. Cambridge, MA: MIT Press.
- Sullivan, N., & Pratt, E. (1996). A comparative study of two ESL writing environments: A computer-assisted classroom and a traditional oral classroom. *System*, 29(4), 491-501.
- Thompson, D. (1993). One ENFI path: From Gallaudet to distance learning. In B. Bruce, J. K. Peyton, and T. Batson (Eds.), *Network-based classrooms: Promises and realities* (pp. 210-227). New York: Cambridge University Press.
- Warschauer, M. (1996). Comparing FF and electronic discussion in the second language classroom. *CALICO Journal*, 13, 7-26.
- Warschauer, M. (1998). Researching technology in TESOL: Determinist, instrumental, and critical approaches. *TESOL Quarterly*, 32(4), 757-761.
- Yagelski, R.P., & Grabill, J.T. (1998). Computer-mediated communication in the undergraduate writing classroom: A study of the relationship of online discourse and classroom discourse in two writing classes. *Computers and Composition*, 15(1), 11-40.