

# A Qualitative Study of ESL College Students' Attitudes about Computer-Assisted Writing Classes

Waleed A. Ghandoura

Assistant Professor of TESOL, Umm Al-Qura University

PO. Box 715, Makkah 21955, Saudi Arabia

Tel: 96-65-0669-0902 E-mail: waleedg@uqu.edu.sa

Received: November 22, 2011

Accepted: January 16, 2012

Published: April 1, 2012

doi:10.5539/elt.v5n4p57

URL: <http://dx.doi.org/10.5539/elt.v5n4p57>

## Abstract

The purpose of this qualitative study was to examine a sample of 13 English as a second language (ESL) students' attitudes about a computer-aided composition (WebCT) class. Participants were enrolled in an introductory writing course. Data from student diaries revealed that students enjoyed and valued the WebCT course and that the course facilitated their acquisition of writing skills. Classroom observations yielded information about the structure of the class in addition to instructor activities, including the success of repeating key ideas and brainstorming about topics in class. Interviews with the students revealed that they thought computers made the acquisition of writing skills easier and faster. Also, students valued the feedback from instructors and fellow classmates alike.

**Keywords:** Online writing, Group editing, Peer editing, Computer-Assisted language learning, Online forums

## Introduction

There is a prevailing belief that computer technology as it relates to education is an instructional tool in and of itself. Computer technology in English as a Second Language (ESL) and English as a Foreign Language (EFL) composition classrooms is becoming a norm of 21st-century literacy, environment, and culture. Eldred and Toner (2003) believed that computer technology is such an important feature of 21st-century culture that pretending that it merely augments pedagogy is a mistake: "Software already teaches. It's our job to teach with it and against it" (p. 44). Electronic literacy has already transformed writing instruction.

The technological revolution is accelerating, and a number of researchers have advised educators to begin integrating technology into their approaches to teaching for various reasons. Some scholars have argued that educators who reject technology run the risk of obsolescence (Herron & Moos, 1994). Others, like Lanham (1993), have argued emphatically for the integration of computers into the writing curriculum, noting that "The students we teach are going to do most of their writing and much of their reading on an electronic screen. They are going to live—they live now—in a world of electronic text" (p. 121). A considerable amount of research has been conducted that reveals the value of ESL and EFL Web sites in educational settings (Chen, 1988; Kern & Warschauer, 2000; Warden, 1995; Warschauer, 2000). The Web can be used to provide linguistic exercises (Li, 1995), to access authentic language materials (Lixl-Purcell, 1995), to stimulate communicative exercises (Rosen, 1995), and enable students to publish their work (Bowers, 1995).

Recent research in the area of computer-mediated communication (CMC) and instruction has shown that compared with face-to-face groups, computer-mediated groups are more likely to make higher quality decisions about editing, revision, grammar, structure content, and feedback (Easton, George, Nunamaker, & Pendergast, 1990; Gallupe, Bastianutti, & Cooper, 1991; Steeb & Johnston, 1981), generate more ideas (Valacich, Paranka, George, & Nunamaker, 1996), and empower students with better communicative abilities. However, research on the effects of using technology in the teaching of writing courses is in its infancy: "Because research on computers and writing is a relatively new phenomenon and because the technology has changed dramatically over a short period of time, studies on any single aspect of computer assisted writing are scarce" (Ferris & Hedgecock, 1998, p. 267).

Though few formal studies on computer technology exist, the homepage of WebCT, an educational platform, claims: In North America, virtually every institution of higher education conducts some form of e-learning. Australia has adopted e-learning technology on a broad scale to bridge the distances separating its population centers. The UK, Europe and Japan are also steady adopters, while interest is continuing to grow in many other regions around the world. The global adoption of e-learning is strongly evidenced in WebCT's customer base which includes thousands

of institutions in more than 80 countries worldwide. (para. 1)

WebCT is just one example of many such course management systems used.

In the university where this study was conducted, many ESL students, who come from foreign countries and who have few or no computer skills, may feel challenged and uncomfortable learning in a Computer Assisted-Writing Class (CAWC). While there is plenty of research that alludes to the benefits and potential of computers in education, there have been few systematic studies concerning the attitudes and beliefs of ESL students toward learning in a CAWC classroom and the personal, cultural, or course-based constraints that may impose on their learning and acquisition of language in such settings. In particular, gaps exist concerning whether existing findings (e.g., Easton et al., 1990; Gallupe et al., 1991; Steeb & Johnson, 1981; Valacich et al., 1996) about the improved decision quality and idea generation characteristic of computer-mediated writing groups are similar for ESL students.

The purpose of this study was to examine the attitudes and beliefs of a group of basic level college ESL writing students about a computer-assisted composition class. Specifically, it focused on their beliefs and attitudes regarding their writing development through the extensive use of the Web-based course management system (CMS), WebCT. The study reports on ESL students' perceptions of the obstacles and difficulties they experienced when learning composition in a CAWC environment. Qualitative data were collected through: (a) field notes and observations, (b) interviews with the students, (c) the collection of students' assigned papers including their multiple drafts, and (d) student diaries. The study examined relevant issues such as how students who consider themselves technologically challenged adapt to such classes, what obstacles and benefits they believe they have experienced, what they think of CAWC as a tool for improving ESL writing, and what personal or cultural constraints may exist that affect their ability to benefit from CAWC.

This study attempted to answer two research questions:

1. What are college ESL students' attitudes and beliefs about the benefits of computer-assisted writing classes (CAWC) using WebCT?
2. What are college ESL students' attitudes and beliefs about the difficulty of computer-assisted writing classes (CAWC) using WebCT?

## **1. Method**

### *1.1 Participants*

Participants in this study consisted of 13 ESL students enrolled in an English composition class at a public university in the United States. The informant profile showed that eight of the participants (61.5%) were male and 5 female. Nine of the participants (69%) were from Malaysia, with 1 participant (7.7%) from each of the following countries: Netherlands, Bulgaria, China, and Japan. All 13 participants (100%) had completed high school or an equivalent degree, and 1 (7.7%) had earned a college degree. In this sample, 4 participants (30.8%) were majoring in finance, 2 (15.4%) each in business/business technology, diet/nutrition, and marketing, and 1 (7.7%) each in computer science or other. Most of the participants (92.3%) had not taken a WebCT course before. All 13 of the participants had a computer at home, and 61.5% felt comfortable taking a course in a lab. For previous computer knowledge, 38.5% rated themselves as "average," 38.5% rated themselves as "good," and 15.4% rated themselves as "excellent." The participating students were between the ages of 18 and 25. They had used computers for an average of 7.46 years ( $SD = 2.26$  years).

### *1.2 WebCT Course*

The course examined in this study was Introductory College Writing, normally a required first semester course for all incoming students. The course is designed to teach basic college academic skills needed to complete written assignments in other academic courses. The course uses readings in the nature and history of language, semantic and linguistic analysis, as well as problems in rhetoric. The instructor for the WebCT course was a Professor of English in the university's English Department who has conducted research on distance education and other topics. She actively used the computer lab in her undergraduate writing classes and later on in other graduate courses. Most of the instructor's courses were delivered via the Internet-based WebCT platform; the same platform is also used by other instructors throughout the university.

### *1.3 Materials and Observation Methods*

There were several sources of data for this study. The first was an informant profile developed by Oxford (1990) that assessed participant demographic information, language skill, and computer experience. The second source was classroom observation. The researcher attended all the class sessions of the course over the span of an academic semester. The researcher noted the nature of interactions that took place between the students and other elements

such as the computers, other students, and the instructor. The students would chat face-to-face or online, and they consulted with the instructor both online and face-to-face when they did not understand something. The third source of information was students' course diaries. The diary entries provided insight into the students' introspective process. The fourth source was unstructured interviews conducted with the students. The interviews were guided by the student's diary data. All interviews were conducted in a place where students were guaranteed privacy and confidentiality. Interviews were tape recorded and transcribed for analysis.

#### 1.4 Procedures

Each participant signed an informed consent form that included an explanation of the purpose of the study, the methodology, the implications (both positive and negative), the right to anonymity, the participants' right to withdraw at any point, and the way results would be used and disseminated. The data used in this study were collected throughout the semester. The primary method of analysis was qualitative content analysis. The multiple sources of information discussed above were reviewed and themes were derived.

The researcher followed Guba's (1978) suggestions for converting field notes and observations into systematic categories of analysis. First, the researcher began by looking for *recurring regularities* in the data. These regularities represented patterns that were sorted into categories. Categories were judged by two criteria: *internal homogeneity* and *external heterogeneity*. The first criterion concerns the extent to which the data that belong in a certain category hold together or dovetail in a meaningful way. The second criterion concerns the extent to which differences among categories are bold and clear. The researcher also utilized NUD\*IST 6 software in coding and determining themes.

## 2. Results

### 2.1 Diary Entries

#### 2.1.1 First Set of Diary Entries

The first set of diary entries was collected after the third week of class. Results centered around one primary category: the effectiveness of WebCT. The effectiveness of WebCT was apparent in the student responses, which were largely positive. Student diary entries explored the novelty of their first experiences with WebCT and enthusiasm for WebCT-enabled communication with other students. In these initial diary entries, many students enumerated the benefits of WebCT. According to these comments, students constantly valued the instructor's contribution to the course throughout the semester. Student diary entries frequently contained remarks about the benefits of interaction with and feedback from fellow classmates. The usefulness of WebCT tools, such as the bulletin board, was frequently mentioned as well. According to one student,

The WebCT helped us improve our writing skills through several ways. There are peer responses, teacher responses, a bulletin board, and course materials. Peer responses properly give us general comments about our essay. For example, my classmates can look at our essay types, topic sentences, and thesis statements, and learn from them.

In the initial diary entries, many students expressed enthusiasm for the ease with which information could be communicated using WebCT. One student wrote,

*Well, I find that with the help of WebCT, work could be done fast and easily. Through the WebCT, my fellow classmates and I could communicate and give opinions to try to help out. Furthermore, it was easy to communicate with the teacher, where she'd give responses to other students and myself. The responses were very useful in writing a good essay. The course materials were sufficient and other guidelines were very useful. The bulletin board was also very useful and convenient.*

A second student comment summed up the initial WebCT experience by writing,

*I think that the WebCT is very good... and I wish I had it back in my country. WebCT keeps us updated on the progress of the course. With WebCT, learning is not just from the instructor, it is from within the class. I get to hear opinions from other classmates from various countries.*

#### 2.1.2 Second Set of Diary Entries

For the second set of diary entries, students were asked to discuss the perceived strengths and weaknesses of the WebCT course. This information was collected near the end of the course.

##### 2.1.2.1 Strengths

Students seemed to focus on the ways in which the structure of the course assisted with the learning process. When discussing the strengths of the course, students tended to focus on the format of the course and the WebCT. The most frequently mentioned strengths of the course were ease of communication, accessibility, and the effects of these on writing.

In terms of the ease of communication, students reported that the use of WebCT facilitated communication on two levels:

- Students were provided with individual attention from the instructor, so that they received detailed feedback on their writing skills. This feedback was provided quickly by the instructor and students could access it at anytime, without having to make an appointment and wait for results. In this way, students could improve their skills at their own pace, and the instructor could simultaneously address different levels and writing issues for each student.
- Students were provided with individual feedback from other students. According to one student, this provided the students with “An opportunity to learn from what others know, and to share knowledge of different cultures and writing styles.”
- Other students highlighted the benefit of collaborative work with international students, stating that the multicultural perspectives on writing were beneficial to the learning process.
- All 13 students mentioned some benefit from sharing ideas and working collaboratively with the other students, highlighting the instructional importance of this type of communication.

All 13 students elaborated on the positive effects that the WebCT course had on their writing skills development:

- Students reported that the WebCT course had the “dual benefit” of face-to-face human interaction, as well as the convenience and depth of web communications and feedback.
- Students indicated that it was helpful to become familiar with WebCT formats, as these are becoming more prevalent across educational domains.
- Students said that the use of WebCT to teach writing made them write more frequently with fewer technical mistakes and made it easier to avoid mechanical errors such as spelling mistakes and sentence fragments.
- Students felt that the course taught them how to use additional software, such as computerized dictionaries.
- One student commented that with the use of the WebCT course “grows the sense of responsibility to learning and discovering one’s own mistakes and best ways for learning.”

#### 2.1.1.2 Weaknesses

In order to understand how WebCT courses might be changed to offer more benefits to the students, participants were also asked to discuss weaknesses of the course in their diary entries. When analyzed for thematic content, the proposed weaknesses fell into two categories: concerns about the structure of the course and concerns about the students themselves.

Students expressed concern over several aspects of the *course structure*:

1. Students reported difficulty with the classroom environment, citing frequent distractions, talking, and organizational chaos as problems with learning writing in a computer lab. One student mentioned that it was difficult to pay attention to the instructor while working on a computer connected to the Internet. Other students elaborated on the organization of the classroom, stating that it was difficult to see the instructor from many workstations and difficult to hear due to students typing and browsing the Web. Still other students reported that the lab space was disorganized and that there was little space for notebooks, books, and personal belongings (purses, backpacks, jackets, etc.). One student diary even related the feeling that the lab experiences undermined handwriting practices and the learning process of *writing* in English.

2. Student diary entries explored problematic issues with the WebCT applications. Several students reported that the bulletin board was disorganized because there were no designated folders for assignments, and others indicated that the appearance of the bulletin board needed improvement (e.g., more colorful presentations and designs, etc.). Student diaries indicated problems with software compatibility, including having to attach files instead of pasting them directly in order to preserve formatting. Students felt that improvements to these areas would strengthen the overall appeal of the course.

Student diary entries indicated their concerns when considering the *weaknesses of the course*:

1. Many students mentioned the problem of language barriers. While multicultural perspectives were listed as a strength of the course, the difficulty of communication in various languages limited effective dialogue between students.

2. Several student diaries mentioned the novelty of providing feedback to other students. Frequently, students had little experience with this sort of feedback and expressed fears about hurting and offending fellow classmates. Some

students expressed reluctance to “judge others.” The majority of the students indicated that they became more comfortable with this aspect as the course progressed, with several students stating that they “needed time to adjust.”

### 2.1.3 Classroom Observations

Throughout the course, the researcher was present for lab activities and observed the functionality of the lab work and the students. According to the researcher’s observations, WebCT was a good platform for practicing peer response. It enabled students to review their early drafts. Whether these early drafts were good or bad, complete or not, they were a good source for generating new ideas, practicing grammar, and checking essay organization. They helped by enabling students to view instructor feedback to other students. The researcher observed that student papers were frequently built on previous drafts, teacher responses, and peer responses. Students were asked to make a habit of keeping all drafts on their computers on a disk, and to consult these drafts in the individual conferences with the instructor. These drafts were required in student portfolios.

The researcher observed that having access to the Internet helped these students seek more information about their topics. This access enabled students to examine different styles used in writing about the same topic. Reading and giving responses to the messages posted on the bulletin board proved very useful. WebCT had a feature that let the instructor track student activities. Tracking included information about a student’s first access, last access, number of hits, number of read posts, and number of posted assignments. This tracking further facilitated the learning process by allowing the instructor to monitor student progress individually.

To summarize, the classroom observations yielded many examples of aspects of the course that worked. These included content accomplishments, such as division of tasks into three levels (whole paper, sentence, and word levels) and the repetition of the initial lessons throughout the course. In class, brainstorming for topics proved useful while Internet access and additional resources on the website seemed to provide helpful links for gathering information about topics and writing about them. The researcher noted the importance of the bulletin board postings and feedback from the instructor and fellow students.

### 2.1.4 Interviews

Student impressions were gathered through unstructured interviews. During these interviews, students reported that, compared to “pen and paper,” computers were relatively faster, easier, more convenient, and more efficient. With all the word processing features at their disposal (including cut, paste, delete, modify, and saving as many files or drafts as they needed), students found that class and student time was saved. Students indicated that they felt that more work could be accomplished much faster. When asked whether students drafted their papers first on paper or using a computer, the majority (60%) of them reported that they had started on a computer. One of the students responded:

*I write more often in the computer assisted class. Because it is easy to type...when you have to write on paper it's annoying. Before I came here and when I'm not using computers, I don't like to share papers with others. I don't like to give my papers to them to point out my mistakes. But, for the WebCT, it's fine because everybody posts their papers so that they can give responses to others. And, yes, it is more convenient and more organized.*

According to the interviews, computers made it a lot easier for students in this course to use the different features of word processing, such as different fonts, tracking changes to an original document, colors, divided screens, comment boxes, and so forth. One student said,

*WebCT lets the teacher give me detailed responses with organized examples. She cannot do that in class, and I think she does that from her office or from home. These organized responses are very helpful for me and for my classmates.*

Results of thematic analysis of the interviews provided information about how students perceived the course and materials. Students reported that the use of computers and WebCT facilitated the process of learning to write in English, indicating that computers made the process faster and easier. Students reported that they valued the responses and feedback from the instructor and fellow classmates.

## 3. Discussion

Several aspects of the experiences of this group of international students were particularly encouraging. These participants constantly had access to WebCT to give feedback (both to their own work and to the work of other students), which created a fertile environment that supported the manifestation of the process approach in writing instruction—the strategy set forth by the instructor. The participants repeatedly reported that even if they did not fully benefit from their peers’ responses, they at least thought it developed a stronger sense of awareness toward the audience because they learned that a bad paper would be criticized bluntly. Qualitative feedback indicated that these collaborative writing exchanges motivated most learners “by providing personal interaction and creating a cultural

connection to the target language culture” (Opp-Beckman & Kieffer, 2004, p. 240).

The involvement of the students in such authentic communication allowed them to reach communicative goals. According to Brown (2000), “Communicative goals are best achieved by giving due attention to language use and not just usage, to fluency and not just accuracy, to authentic language and contexts, and to students’ eventual need to apply classroom learning to previously unrehearsed contexts in the real world” (p. 69). Participants in this study came to recognize their own “cultural-based values, feelings, attitudes, and [were] able to communicate them to others and experientially learn the logic of another cultural system” (Opp-Beckman & Kieffer, 2004, p. 240). Participants in this study thought they had benefited from an instructor who educated them inside and outside of class, who taught at the point of need, and who adjusted the speed and content according to their needs.

The researcher and these participants believed that more class time was saved on some of the most frequently asked questions. These included questions such as those related to assignment due dates, readings for upcoming classes, and unrelated student-teacher communications.

#### **4. Conclusions and Pedagogical Implications**

In conclusion, there were mixed results from the main research questions. Findings for the first research question--the attitudes and beliefs about the benefits of using WebCT to learn writing--were positive. Students highlighted the ease and efficiency of online feedback, the impact on learning of reviewing other students’ papers and feedback, the helpfulness of the instructor’s detailed feedback, and the usefulness of various web-related tools. With regard to the second research question--the difficulties of using WebCT to learn writing--results were also negative. The qualitative findings revealed that students frequently had difficulty providing feedback to others, experienced difficulty with accepting the feedback of other students, and ran into problems with the accuracy of other students’ feedback. Students overwhelmingly expressed issues with the organization of both the lab and the online bulletin board.

This researcher believes that CAWCs using WebCT, combined with traditional classroom activities (lecturing, in-class testing, participation, face-to-face peer response), could be successfully integrated into ESL composition pedagogy. Obviously, this study involved the reported attitudes and beliefs of only 13 students, so broad generalizations cannot be claimed. Nevertheless, this study supports and confirms the research previously mentioned by other advocates of technology-aided instruction that claim positive feedback from students.

The general conclusions that were reached by this study were as follows:

1. The participants thought that WebCT provided a means by which the instructor could teach at any needed point without utilizing class time. Specifically, the bulletin board allowed the instructor to write clear and detailed feedback with all the features of word processing software that could be read by students at their convenience and from anywhere there was access to the Internet.
2. Most importantly, the participants thought that WebCT facilitated peer review in every possible way. Each student in class had access to every single draft written by classmates. Not only that, the students had access to every piece of feedback that was written to any classmate, either by a student or the instructor, something which cannot be accomplished easily using face-to-face peer response.

Overall, students had positive, albeit slightly varied, perceptions of using WebCT for writing development. This was shown in all areas of data collection including student diaries, interviews with students, and classroom observations. Many diary entries referred to the value of having both peer response feedback and feedback from the instructor. While either of these types of feedback appears to be valuable, it may be their combination that is most important. The feedback from the instructor gave students an idea of their progress in terms of the level of writing they were expected to achieve, while the peer response feedback gave students an understanding of how they were progressing relative to their peers. The combination of online instruction and face-to-face interaction seems to have been particularly effective. Instruction from multiple sources appears to have contributed to the students’ overall writing development.

One additional aspect of WebCT that students found particularly useful was the immediacy of the instructor feedback they received. Rather than having to wait days or weeks for feedback from the instructor, students were able to get some idea about the quality of their writing very quickly. While each of the individual components of WebCT was well received, apparently the combination of all of the elements of the course (e.g., peer response, multiple modes of feedback from the instructor, and the immediacy of feedback) were the factors that led to an overall positive perception of the course.

Given that the prominent role of computers in a writing course is a somewhat new development, the level of comfort that students had with using computers was of central importance in the current study. Interestingly enough, students

who were less successful during the class tended to be more comfortable with the use of computers in terms of speaking up in class (i.e. expressing ideas and asking questions) or with the technology used in the course. This indicates that efforts should be made to increase the comfort level of all students regardless of their expertise.

### 5. Limitations

A limitation of this study stems from the use of researcher observations. Only one set of observations was gathered by one researcher. This left no opportunity for comparison to determine accuracy of the observations. The researcher's observations were not gathered in a systematic way (e.g., the same checklist each week). The presence of the researcher in the lab may have affected the behaviors of the instructor and students, especially given that they knew they were being observed. Furthermore, when interviews were conducted, they were not conducted in a structured way to ensure that all participants received the exactly the same questions, nor were they conducted at the same time or in the same exact space to ensure that the timing or environment did not influence the responses.

Perhaps the biggest threat to generalizability arises from the lack of random sampling. Because the sample self-selected (i.e., they enrolled in the course), their experiences might not accurately convey the experiences of others in similar situations. In other words, the sample might be unique and might not represent the attitudes of other students taking similar classes. The selection of one course may have biased the results, in that the results may have been influenced by the instructor, the lab, the equipment, the semester, and so on. In the same way, the utilization of one campus might have biased results.

Another limitation arises from the lack of a control group. Although this study could measure the attitudes of the students taking the WebCT course, it could not compare these with the attitudes of students taking traditional English writing courses. Therefore, no determination can be made that the use of WebCT for the English class caused the attitudes of the students.

### 6. Recommendations

Future researchers could focus on several different areas in order to extend the results of the current study.

1. Future research could add to the results of the current study if other potentially relevant student variables were incorporated into the analysis.
2. The use of alternative research designs could add to the findings from the current study.
3. Future studies could administer pre-test and post-test language assessments in order to examine more objective measures of learning.
4. Future research could extend the current findings to other courses.
5. Future research could address some of the limitations of the current study. Multiple classroom observers, the use of existing measures of attitudes about the course (with known reliability and validity), and the use of objective measures of learning would be helpful in determining if any of the limitations of the current study had an impact on the results.

Three recommendations for educational practice are offered. First, students overwhelmingly endorsed the use of computers in writing courses, indicating that web-based learning in composition classes should be implemented at more schools. Second, English educators might benefit from the use of WebCT technology in their courses. Third, English educators might benefit from the implementation of peer feedback in their courses.

This investigation demonstrated the benefits of computer technology in the writing classroom. Student diaries and classroom observations revealed that students enjoyed using the WebCT platform. As an instructor, this investigator found that she was able to communicate more easily and quickly with the students. Their questions were dealt with both individually (making them more precise) and as a group (facilitating instruction by dealing with major teaching points). Future research along the suggested areas will benefit English writing programs and knowledge of how to incorporate computer technology into them.

### References

- Bowers, R. (1995). Web publishing for students of EST. In M. Warschauer (Ed.), *Virtual connections: Online activities and projects for networking language learners* (pp. 363-364). Honolulu, HI: Second Language Teaching and Curriculum Center.
- Carson, J., & Nelson, C. (1994). Writing groups: Cross-cultural issues. *Journal of Second Language Writing*, 3(1), 17-30. Writing groups: Cross-cultural issues. [http://dx.doi.org/10.1016/1060-3743\(94\)90003-5](http://dx.doi.org/10.1016/1060-3743(94)90003-5)
- Chen, H. (1988). Computer assisted writing in Taiwan: Methods and perspectives. In C. Chen (Ed.), *Papers from the Fifth Conference on English Teaching and Learning in the Republic of China* (pp. 173-191). Taipei: The Crane.

- Easton, G., George, J., Nunamaker, J., & Pendergast, M. (1990). Using two different electronic meeting system tools for the same task: An experimental comparison. *Journal of Management Information Systems*, 7(1), 85-100. <http://www.jmis-web.org/toppage/>
- Eldred, J. C., & Toner, L. (2003). Technology as teacher: Augmenting (transforming) writing instruction. In P. Takayoshi and B. Huot (Eds.), *Teaching writing with computers* (pp. 33-54). Boston: Houghton Mifflin Co.
- Ferris, D., & Hedgcock, J. S. (1998). *Teaching ESL composition: Purpose, process, and practice*. Mahwah, NJ: Lawrence Erlbaum.
- Gallupe, R. B., Bastianutti, L. M., & Cooper, W. H. (1991). Unblocking brainstorming. *Journal of Applied Psychology*, 76(1), 137-142. <http://dx.doi.org/10.1037//0021-9010.76.1.137>
- Gass, S. M., & Varonis, E. M. (1985). Non-native/non-native conversations: A model for negotiation of meaning. *Applied Linguistics*, 6(1), 71-90. <http://applied.oxfordjournals.org/content/6/1/71.full.pdf+html>
- Guba, E. G. (1978). *Toward a methodology of naturalistic inquiry in educational evaluation* (Monograph Series No. 8). Los Angeles: University of California, Center for the Study of Evaluation.
- Herron, C., & Moos, M. (1994). Electronic media in the foreign language and literature classroom: A fusion between science and the humanities. *Foreign Language Annals*, 27, 479-490. <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291944-9720/issues?activeYear=1994>
- Kern, R., & Warschauer, M. (2000). Theory and practice of network-based language teaching. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 1-19). New York: Cambridge University Press.
- Lanham, R. (1993). *The electronic word: Democracy, technology, and the arts*. Chicago: University of Chicago Press.
- Li, R. C. (1995). English as a second language home page. In M. Warschauer (Ed.), *Virtual connections: Online activities and projects for networking language learners* (pp. 202-204). Honolulu, HI: Second Language Teaching and Curriculum Center.
- Lixl-Purcell, A. (1995). German area studies on the net. In M. Warschauer (Ed.), *Virtual connections: Online activities and projects for networking language learners* (pp. 292-294). Honolulu, HI: University of Hawaii, Second Language Teaching and Curriculum Center.
- Opp-Beckman, L., & Kieffer, C. (2004). A collaborative model for online instruction in the teaching of language and culture. In S. Fotos & C. Browne (Eds.), *New perspectives on CALL for second language classrooms* (pp. 225-252). Mahwah, NJ: Lawrence Erlbaum Associates.
- Oxford, R. L. (1990). *Language learning strategies: What every teacher should know*. New York: Newberry House Publishers.
- Rosen, L. (1995). City net: Travel the world from your desktop. In M. Warschauer (Ed.), *Virtual connections: Online activities and projects for networking language learners* (pp. 308-309). Honolulu, HI: University of Hawaii's, Second Language Teaching and Curriculum Center.
- Steeb, R., & Johnston, S. C. (1981). A computer-based interactive system for group decision-making. *IEEE Transactions on Systems, Man, and Cybernetics*, 11(8), 544-552. <http://dx.doi.org/10.1109/TSMC.1981.4308742>
- Valacich, J. S., Paranka, D., George, J. F., & Nunamaker, J. F., Jr. (1993). Communication concurrency and the new media: A new dimension for media richness. *Communication Research*, 20(2), 249-276. <http://dx.doi.org/10.1177%2F009365093020002004>
- Warden, C. (1995). Coping with 500 EFL writing students in Taiwan. *TESOL Matters*, 5(2), 11. [http://www.tesol.org/s\\_tesol/seccss.asp?CID=274&DID=1748](http://www.tesol.org/s_tesol/seccss.asp?CID=274&DID=1748)
- Warschauer, M. (2000). The changing global economy and the future of English teaching. *TESOL Quarterly*, 34, 511-535. <http://dx.doi.org/10.2307%2F3587741>