Benefits for language students using CMC – Evidence for and against equalization of student participation and increase in target language production

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Abstract

In recent years, the use of Computer Mediated Communication (CMC) in EFL classrooms has been increasing. Research indicates that there are benefits of using CMC for language learning. Students who are silent in face-to-face communication contribute in CMC discussion. As well, it is the students who contribute the least in face-to-face discussion who increase their participation the most in CMC discussion. An increase in the total production of target language has also been claimed. However, there is sufficient evidence to cast doubt on the acceptance of claims of benefits for all language students. This literature review will focus on the two main benefits claimed by researchers in CMC, and describe several studies that indicate that some groups of language students did not benefit from the use of CMC. read news on the Internet in the future.

1. Benefit one: Increase in student participation

1.1 Evidence for an increase in participation

The most often cited benefit of using CMC for language learning is that CMC promotes the equalization of participation of language students in discussion (Beauvois, 1992, 1998; Bohlke 2003, Chun 1994; Kelm, 1992; Kern, 1995; Sullivan & Pratt, 1996; Tella, 1992, Warschauer 1996a). Students who are silent in F2F discussion contribute in online discussion (Kern, 1995). There are many reasons for this, perhaps the most obvious being that in online discussion, all participants can contribute at the same time. There is no need to wait for one's turn, with the result being that students have the opportunity to contribute far more in online discussion than in face-to-face (F2F) discussion (Beauvois 1992, 1998, Kelm 1992).

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As well, it is the students who participate least in face-to-face communication who increase their participation the most in electronic discussion (Bump, 1990; Warschauer, 1996a). In F2F discussion, it is the less assertive and less proficient learners who receive the fewest opportunities for output (Chaudron, 1998; Johnson, 1995; both cited in Cheon, 2003). As well, other groups, including less able, shy or self-conscious students, women, and minority groups may be at a disadvantage in F2F discussion (Beauvois, 1992; Berge, 1997; Flores, 1990; Kelm, 1992; Selfe, 1990; Sproull & Kiesler, 1991), where they may feel "on the spot". On the other hand, CMC is known as the faceless environment. Participants are invisible in CMC. There are no faces, no facial expressions, and CMC is low in social cues - body language, tone, pitch, etc. (Kupelian, 2001; Sproull & Keisler, 1991). This faceless environment can be face-saving as well, relieving learners of their inhibitions and enabling them to express themselves more freely (Hoffman, 1996).

Students who are very vocal in F2F discussions may find that their ability to take the floor decreases in online discussion. Sullivan (1993) and Beauvois (1998) both assert that one student cannot dominate in synchronous CMC (i.e. "chat"). According to Smith (1988, p. 130, cited in Kern 1995, p. 459), "Individuals need no longer be excluded from a discussion because someone with a more insistent manner is hogging the floor. Everyone gets an equal opportunity to participate, and the most interesting and relevant ideas, not the loudest voice, attract the most attention." However, Bohlke (2003) reported that one student managed to dominate both F2F and online discussion.

This "leveling effect" (Kelm, 1992) applies to teachers as well, as they become merely another participant in the discussion. Teachers must be willing to give up their authority as the discussion is taken over by students (Kern, 1995; see also Warschauer, 1997). In Kern (1995)'s study, in F2F discussion, instructors took 45% of total turns. In SCMC (synchronous CMC, or "chat") discussions, instructors took from zero to ten turns, for a maximum of 4% of total messages. These results appear to be representative of CMC in general, reflecting the oft-quoted "guide on the side" image of the instructor. Kelm (1992) warns that instructors may find themselves becoming obsolete.

These are all positive effects of online discussion, as the result is that students, at least in theory, can produce far more output than they could in F2F discussion. As well, students are exposed to far more input in online discussions than

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they are in F2F discussions. This leads to more proficiency in the target language (Lee
& Van Patten 1994, cited in Beauvois 1997).

It should be noted here that measures of increased participation for less
vocal students in F2F discussion necessarily means a drop in participation from more
vocal students. But this does not mean that more vocal students are disadvantaged in
CMC discussion. In Warschauer's (1996a) study, the four quietest members of the
class in face-to-face discussion increased their participation almost ten-fold and thus
went from almost total silence to relatively equal participation. The participation of
students who were more vocal in F2F discussion dropped as a result of using CMC,
but not below 25% in a four-person group. Thus, the most verbal students decreased
their participation to a more equal level, and the least verbal students (who were all
Japanese) increased their participation dramatically. Beauvois (1997), as well, notes
that the students who contributed the most if F2F discussion were not disadvantaged
by SCMC discussion, producing as many messages as utterances.

1.2 Conflicting evidence: Warschauer (1996a) and Fitze (2006)

The following two studies have found conflicting evidence for increased
equality of participation. Warschauer (1996a) studied the participation patterns of 16
mixed-nationality ESL students living in the USA, which he assigned randomly to
four groups, two of whom participated in SCMC discussion and two in face-to-face
discussion. Then the four groups switched environments. This was all done in one
usual 75-minute class period. Warschauer (1996a) used the Gini coefficient as a
measure of equality of participation. He found that although three of the four groups
greatly increased their equality of participation (as measured by the Gini coefficient, a
useful measure of equality) in SCMC, a fourth showed decreased equality of
participation in the online discussion, or more unbalanced discussion. Warschauer
(1996a) attributes this result to the fact that the three groups that did increase equality
of participation all had Japanese members, whose participation in F2F discussion was
minimal, and led to very unbalanced participation with relatively high Gini
coefficients of .46 to .59[1]. There were no Japanese students in the fourth group, which
had a Gini coefficient of .10 in the F2F discussion, showing a far more balanced
discussion than the other three groups in F2F discussion, and far more balanced as
well than their own online discussion. These results lend support to the claim that
online discussion shows more balanced participation, with the greatest increase in

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[1] The lower the Gini coefficient, the more equal, or balanced, the discussion is.

participation being by students who contribute least in F2F discussion. However, it also demonstrates that not all groups benefit from this feature of online discussion, and that some groups (groups with reasonably balanced equality of participation in F2F discussion) may actually be disadvantaged by it.

Fitze (2006) studied two groups of mixed-nationality advanced ESL students living in Canada (n=27) who all participated in both F2F and SCMC discussion for four weeks. He found that one of the two groups he examined showed more balanced participation in SCMC (with Gini coefficients of 0.301 and 0.300) than in F2F discussion (with Gini coefficients of 0.498 and 0.578). But he found that the participation of the second group was not influenced by the type of conference. Gini coefficients for the second group in SCMC were 0.438 and 0.445, and for F2F were 0.446 and 0.419. In other words, in the second group, participation was rather consistent regardless of type of environment. Fitze's (2006) two groups were approximately balanced in terms of number of students, gender, and language and cultural background, so there was no obvious reason for the difference in results between the two classes. He concludes that there may have been other, unknown factors which influenced the outcomes, and suggests that future studies assess factors such as speaking fluency, shyness, and introversion; factors which Warschauer (1996a) attributes to students' tendency to participate less in F2F discussions.

1.3 Bohlke's study (2003)

Both Warschauer (1996a) and Fitze (2006) used the Gini coefficient to determine equality of participation. Bohlke (2003) used standard deviation as a measure of variance across groups. He studied the participation of 27 American learners of German as a foreign language in SCMC and F2F discussion. Students discussed a topic in one mode and then switched to the other in a single class period, similar to the procedure of Warschauer's (1996a) study. He calculated the percentage of contribution of each participant, he then performed an F-max analysis on the variance of all groups to arrive at the conclusion that the variance in the F2F groups was significantly greater than that of the SCMC groups, and thus SCMC groups showed more balanced participation. However, when he compared results *across* groups, the results varied. Based on examination of means, his 3 groups of 4 students all showed more equal participation in SCMC than in F2F discussion. By contrast, his 3 groups of 5 students did *not* show increased participation in SCMC. However, Bohlke (2003) did not perform statistical analyses on these group-size results to see if they were significantly different, so while we can accept his claim that his study

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showed that participation was more equal in SCMC than in F2F discussion, his claim of group size effect is questionable. In addition, Bohlke (2003) cites these limitations of his study;

> 1) Students' proficiency in German should have been measured, as this could have been a factor in the different levels of participation.
> 2) Typing skills could have affected the level of participation and should have been assessed.
> 3) Pre- and post-study questionnaire including questions about attitudes towards both discussion modes should have been given, as these attitudes may have influenced participation.

1.4 Implications for language classes

In all of the three studies described above, at least one of the groups of students did not show increased participation in SCMC. Thus, SCMC may not be a suitable alternative to face-to-face discussion for all groups of students. This is a key area for future research. Under what conditions do students benefit from online discussion? The variables that influence the success or failure of SCMC discussion must be identified and measured. Until then, teachers will not be able to accept claims of more equal participation in online environments.

2. Benefit Two: Increase in production of target language

2.1 Anecdotal evidence

The current focus on the importance of output in acquiring a second language (Swain, 1985; Swain & Lapkin, 1995) has called attention to the quantity of language output in CMC discussion as compared to that of face-to-face discussion. However, no studies show an actual measured increase in language production in CMC versus F2F discussion. Some anecdotal evidence (Beauvois 1998, Kelm 1992) supports the notion of increased production, but when we examine available empirical evidence, a clear relational effect cannot be ascertained.

2.2 Kern's study (1995)

Kern's 1995 study of 40 American students studying French, one of the most-often cited studies on CMC versus F2F discussion, found that the mean number

of words produced in SCMC discussion exceeded that in F2F discussion. However, Kern did not perform statistical analysis on his results. Fitze (2006) statistically analyzed Kern's results and found no significant difference. Kern (1995) noted that his study was not tightly controlled, and that there were other conflicting variables that may have interfered with his analysis. Ortega (1997) also notes problems with Kern's (1995) study. Ortega (1997) further points out that in another pinnacle study, Warschauer (1996a) does not include comparisons of total learner language production in the two modes. Chun (1994), who conducted another seminal study in the field, suggests that CMC is instrumental in increasing learner-to-learner interactions, but she does not compare her results to F2F discussion.

2.3 Kobayashi's study (2006)

In another study, Kobayashi (2006) found that language production actually decreased in SCMC mode. In two face-to-face discussions, 15 Canadian students studying Japanese produced 1505 words, whereas in two SCMC discussions, 514 words were produced. However, Kobayashi (2006) did not keep time constant over the two environments. Therefore, we cannot know if similar numbers of words would have been produced over the same period of time. As well, no statistical tests were performed on these results to see if they were statistically significant.

2.4 Fitze's study (2006)

In his study, Fitze (2006) found no statistically significant difference between the total number of words in either conference (SCMC or F2F) in the same amount of time. Fitze controlled for other variables and his study is the most tightly controlled and measured that this researcher has found to date on this subject. His study seems to be the only study in which quantity of output was accurately measured and analyzed.

3. Conclusion

It must here be noted that all of the aforementioned studies all involved the comparison of production of words in SCMC (i.e. "chat") discussion versus that of F2F discussion. I have not found any studies that have investigated the possibility of an increase in production in ACMC (asynchronous CMC, i.e. discussion boards) over face-to-face discussion. This is a large gap in the literature and one I hope will be filled by studies involving ACMC discussion, face-to-face discussion, and SCMC.

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Many researchers have claimed that SCMC benefits language students in two main ways; 1) The equalization of participation of students increases and 2) The production of the target language increases. However, enough evidence exists to cast a doubt on the universal acceptance of these claims. As discussed in this paper, several research papers either showed that either; 1) One or more groups did not benefit from the use of CMC or 2) The evidence used by the authors to justify claims of increased equality of participation or increased production of target language is problematic, in that variables were not carefully controlled for, carefully measured, or statistically analyzed.

Thus, evidence to support the use of SCMC for language learning is, at the present time, insufficient. In future studies, it is hoped that researchers will choose tighter research design and will identify and measure variables which may be causing groups to respond in different ways to SCMC.

References:

Abrams, Z. (2003). The effect of synchronous and asynchronous CMC on oral performance in German. *The Modern Language Journal, 87*(2), 157-167.

Beauvois, M. (1998). Conversations in slow motion: Computer-mediated communication in the foreign language classroom. *The Canadian Modern Language Review, 54*(2), 198-217.

Beauvois, M. H. (1997). Computer-mediated communication: Technology for improving speaking and writing. In M. D. Bush (Ed.), *Technology enhanced language learning* (pp. 165-184). Lincolnwood, IL: National Textbook Company.

Beauvois, M. H. (1992). Computer-assisted classroom discussion in the foreign language classroom: Conversation in slow motion. *Foreign Language Annals, 25*(5), 455-464.

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.

Berge, Z. (1997). Computer conferencing and the online classroom. *International Journal of Educational Telecommunications, 3* (1), 3-21.

Bohlke, O. (2003). A comparison of student participation levels by group size and language stages during chatroom and face-to-face discussions in German. *CALICO Journal, 21*(1), 67–88.

Bump, J. (1990). Radical changes in class discussion using network computers. *Computers and the Humanities, 24*(1-2), 49-65.

Chaudron, C. (1988). *Second language classrooms: Research on teaching and learning.* Cambridge: Cambridge University Press.

Cheon, H. (2003). The viability of computer mediated communication in the Korean secondary EFL classroom. *Asian EFL Journal*, *5*(1), 1-61. [Electronic version]. Retrieved August 18, 2008, from http://www.asian-efl-journal.com/march03.sub2hc.pdf

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Chun, D. (1994). Using computer networking to facilitate the acquisition of interactive competence. *System*, *22* (1), 17-31.

Fitze, M. (2006). Discourse and participation in ESL face-to-face and written electronic conferences. *Language Learning and Technology*, *10* (1), 67-86.

Flores, M. (1990). Computer conferencing: Composing a feminist community of writers. In C. Handa (Ed.), *Computers and community: Teaching composition in the twenty-first century* (pp. 107-139). Portsmouth, NH: Heinemann.

Hoffman, R. (1996). Computer networks: Webs of communication for language teaching. In M. Pennington (Ed.), *The power of CALL* (pp. 55-78). Houston: Athelstan.

Johnson, K. E. (1995). *Understanding communication in second language classrooms*. Cambridge: Cambridge University Press.

Kelm, O. R. (1992). The use of synchronous computer networks in second language instruction: A preliminary report. *Foreign Language Annals*, *25*, 441-545.

Kern, R. G. (1995). Restructuring classroom interaction with network computers: Effects on quantity and characteristics of language production. *The Modern Language Journal*, *79*, 457-476.

Kinginger, C. (1990). Task variation and classroom learner discourse. Unpublished doctoral dissertation, University of Illinois.

Kobayashi, U. (2006). Effects of computer-mediated communication (CMC) on learner's language production and attitude towards oral communication in Japanese. Unpublished master's thesis, University of Alberta.

Kupelian, M. (2001). The use of e-mail in the L2 classroom: An overview. *Second Language Learning and Teaching, 1*(1). [Electronic version]. Retrieved June 29, 2006, from http://www.usq.edu.au/opacs/sllt/1/Kupelian01.htm

Lee, J., & Van Patten, B. (1995). *Making communicative language teaching happen*. New York: McGraw-Hill, Inc.

Ortega, L. (1997). Processes and outcomes in networked classroom interaction: Defining the research agenda for L2 computer-assisted classroom discussion. *Language Learning & Technology, 1*(1), 82-93.

Selfe, C. L. (1990). Technology in the English classroom: Computers through the lens of feminist theory. In C. Handa (Ed.), *Computers and community: Teaching composition in the twenty-first century.* Portsmouth, NH: Heinemann.

Sproull, L. & Kiesler, S. (1991). *Connections: New ways of working in the networked organization*. Cambridge, MA: MIT Press.

Smith, F. (1988). *Joining the literary club: Further essays into education.* Portsmouth, NH: Heinemann.

Sullivan, N. (1993). Teaching writing on a computer network. *TESOL Journal 3*, 34-35.

Sullivan, N. & Pratt, E. (1996). A comparative study of two ESL writing environments: A computer-assisted classroom and a traditional oral classroom. *System, 4*, 491-501.

Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. In S. M. Gass & C. G. Madden (Eds.), *Input in second language acquisition* (pp. 235–253). Rowley, MA: Newbury House.

Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics 16*, 371-391.

Tella, S. (1992). *Talking shop via e-mail: A thematic and linguistic analysis of electronic mail communication*. (Research report No. 99). Department of Teacher Education, University of Helsinki. (Also available as ERIC Document No. ED352015).

Warschauer, M. (1997). *Computer-mediated collaborative learning: Theory and practice* (Research Note #17). Honolulu: University of Hawai'i, Second Language Teaching & Curriculum Center.

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Warschauer, M. (1996a). Comparing face-to-face and electronic discussion in the
second language classroom. *CALICO Journal*, *13*, 7-25.

Warschauer, M. (1996b). Motivational aspects of using computers for writing and
communication. In M. Warschauer (Ed.), *Telecollaboration in foreign language
teaching: Proceedings of the Hawai'i symposium.* Honolulu, HI: University of
Hawai'i, Second Language Teaching and Curriculum Center.