Interaction, Negotiation, and Computer-Mediated Learning

Mark Warschauer, University of Hawai'i

Biodata

Mark Warschauer (markw@hawaii.edu, http://www.lll.hawaii.edu/markw) is a researcher at the University of Hawai'i and the editor of Language Learning & Technology (http://polyglot.cal.msu.edu/llt). His published books include E-Mail for English Teaching (TESOL Publications), Virtual Connections (University of Hawai'i Press), and Telecollaboration in Foreign Language Learning (University of Hawai'i Press).

Abstract

A number of different theoretical perspectives have been developed about the importance and nature of interaction and negotiation in language learning. This paper looks at three of these—input perspectives, output perspective, and sociocultural perspectives—and then discusses the relationship of these perspectives to computer-mediated interaction in the language classroom. This paper will briefly examine three different perspectives on the significance of interaction and negotiation for language learning—input perspectives, output

perspectives, and sociocultural perspectives—and then examine the potential relationship of these perspectives to computer-mediated learning.

Input Perspectives on Interaction and Negotiation

Input perspectives on interaction and negotiation in language learning stem at least in part from the theories of Krashen (1981; 1985; 1987), who postulated that language learning is directly related to the amount of comprehensible input a learner receives. While later researchers rejected some of Krashen's other points—for example, the view that acquisition is an unconscious process (the significance of noticing and awareness will be discussed later in this paper)—the notion of comprehensible input has nevertheless inspired an active school of research. Scholars such as Long (1980; 1989; 1991; 1996; Long & Sato, 1984; Long & Porter, 1985), Pica (1983; 1993; 1994; Pica and Doughty, 1985; Pica, Kanady, & Faladun, 1993),

Gass (1990; Gass & Varonis, 1994), and Varonis (Varonis and Gass, 1985) have directed their attention to examining what features of linguistic interaction and negotiation seem to make input more comprehensible and facilitate language learning[1].

Proponents of input-processing models make a number of claims about the relationship of interaction and negotiation to language learning. The first claim, related to Krashen's views as well as to research by Long (1980; 1985), is that "comprehension of message meaning is necessary if learners are to internalize L2 forms and structures" (Pica, 1994, p. 500).

A second claim is that interactional modifications due to negotiation for meaning facilitate language learning (Long, 1980; 1996). Negotiation is defined by Pica (1994) as "modification and restructuring of interaction that occurs when learners and their interlocutors anticipate, perceive, or experience difficulties in message comprehensibility" (p. 495). Input modification devices deemed beneficial include repetitions, confirmations, reformulations, comprehension checks, recasts, confirmation checks, and clarification requests (Long, 1996). Research has indicated that these input modifications "are significantly more abundant during negotiation than during the rest of learners' interaction" (Pica, 1994, p. 506); they also occur to a greater degree in NS-NNS speech than in NS-NS speech (1994). There are three possible interpretations as to how these interactions assist language learning: (1) they make input more comprehensible; (2) they draw attention to L2 form (see next claim below); and (3) they help provide negative evidence to learners, that is, information as to the inappropriateness of certain linguistic forms (Long, 1996).

A third claim—and one that will be especially important when we later discuss computer-mediated instruction—is that some form of conscious awareness is beneficial if not required for language learning to take place (Long, 1996; 1990; Schmidt, 1993). Schmidt (1990) makes a distinction between input and intake, which he defines as "that part of the input that the learner notices" (p. 139). Schmidt's earlier longitudinal study (1986) of his own experiences learning Portuguese demonstrated a high degree of overlap between the linguistic forms

that he noticed in the process of learning the language and those that later appeared in his own speech. A number of researchers have given further attention to the relationship between noticing and learning (see discussion in Long, 1991), and have demonstrated that enhanced input benefits language learning by calling learners attention to certain linguistic forms (Doughty, 1991; Sharwood-Smith, 1993).

Output Perspectives on Interaction and Negotiation

The above perspective does not preclude a role for the learners' output in assisting language learning; nevertheless, from the input perspective the role of the learners' output is usually seen as secondary and indirect.

An alternative view on the role of output is put forth by Swain (1985; 1993; 1995a; Swain, 1995b; Swain & Lapkin, in press), who posits four main roles for output in language learning (Swain, 1995a; Swain, 1995b). One of these claims, which is presumably non-controversial, is that it enhances fluency. The other three hypothesized functions of output relate more to accuracy than to fluency. The first of these three is that the production of output contributes to consciousness raising: "in producing the target language (vocally and subvocally) learners may notice a gap between what they want to say and what they can say, leading them to recognize what they do not know, or only know partially " (Swain, 1995a, n.p.). The second accuracy-related function of output is in hypothesis testing. Swain (1995a) believes that

> *Output may be used as a way of trying out new language forms and structures as learners stretch their interlanguage to meet communicative needs; they may output just to see what works and what does not. That immediate feedback may not be facilitative or forthcoming does not negate the value of having experimented with their language (n.p.).*

The final function of output suggested by Swain is a metalinguistic one. Swain points out that learners not only try out hypotheses, but they also explicitly discuss doubts and questions they have about language. This assists them in learning from outside experts, learning from their peers, or working to co-construct knowledge with their peers.[2]

There is one other area of output-related research which deserves mention: the effect of planning on language production and language learning. Studies have found that increased planning time results in speech which is more syntactically complex (Crookes, 1989; Ortega, 1994; Ortega, 1995; Skehan & Foster, 1995), but is not more accurate (Crookes, 1989; Ortega, 1994; Williams, 1992); mixed results have been found on fluency (Crookes, 1989; Ortega, 1994). These findings are attributed (see discussion in Crookes, 1989; Ortega, 1995) to the possibility that increased planning time, by allowing learners to push toward greater language complexity, may simultaneously undermine or weaken attempts at greater accuracy and fluency.

Sociocultural Perspectives on Interaction and Negotiation

Proponents of a sociocultural perspective reject many of the central premises of the input and output perspectives. They claim that the very notions of input and output are based on an outmoded information transfer model which does not accurately represent the functions of human interaction (Brooks & Donato, 1994; Donato & Lantolf, 1991; Frawley & Lantolf, 1984b; Platt & Brooks, 1994).[3] They posit instead that student's interactive speech is a form of socially-situated activity which serves to "introduce, create, and transform social realities" (Donato & Lantolf, 1991, n.p.). Learners "speak to know the activity" rather than merely to convey information; interaction thus enables individuals "not only to encode knowledge but to forge it" (Donato & Lantolf, 1991, n.p.).

At least three different (but overlapping) models have been proposed as sociocultural alternatives to an input-output information transfer model of interaction in the classroom:

Interaction as Socialization. In this view, interaction is part of a process of "learning the rules for acceptable social participation within the classroom in order to display that language in particular ways" (Brooks, 1993, p. 234). Brooks (1992, p. 221) cites Hymes and Saville-Troike to point out that L2 learners, like L1 learners, are acting as "essentially participant observers of communication, like small ethnographers, learning and inductively developing rules of their speech community" (Saville-Troike, 1982, p. 205), including "when to speak and when to remain silent, which code to use, when, where, and to whom" (Hymes, 1967, p. 13). Learners are not passive though; at the same time that students are learning the rules of the environment, they are also participating in constructing that environment (Brooks, 1993).

Interaction as Speech Activity. In this view, stemming from neo-Vygotskyan activity theory (Leont'ev, 1979; Luria, 1961; 1976; Wertsch, 1979a), talk is a "cognitive activity that humans press into service in order to solve problems" (Platt & Brooks, 1994). As in other human activity, speech activity is shaped by the goals of the participants and the mediational means they use to achieve those goals (e.g., language, computers, paper). Interactional speech serves three general regulatory purposes: control of object, control of other, and control of self (Frawley & Lantolf, 1984a). Control of object refers in the case of classroom interaction to learners' attempts to define and control the task at hand; it is evidenced by the time and effort that students devote to talking about what the task is and how they will accomplish it (Brooks & Donato, 1994). Control of other refers to participants' efforts to assist their conversant in accomplishing the task (see further discussion in the next section on apprenticeship) (Frawley & Lantolf, 1984a). Control of self refers to learners gradually gathering independent control over functions which previously were "other-regulated"; it is evidenced, for example, by the fact that even within interaction, much of learners talk is believed to be directed to themselves rather than to their partner (Platt & Brooks, 1994). Moving from other-regulation to self-regulation is described as internalization (Donato & Lantolf, 1990).

Interaction as Apprenticeship. In this view, interaction and negotiation are seen primarily as a vehicle for a learner to develop through interaction with peers. Two main interpretations of apprenticeship learning have emerged within

sociocultural theory, a modeling interpretation and a text-mediational interpretation (Wertsch & Bivens, 1992). From a modeling view, interaction provides an opportunity for students to observe and take as their own language, skills, and behaviors of teachers or more experienced peers. This is consistent with the concept of internalization mentioned above. In contrast, the text-mediational view emphasizes how learners participate together "to generate new meanings" (Lotman, 1988). This can occur when learners use their shared knowledge as scaffolding in the process of dialogic participation in meaningful problem-solving tasks (Bayer, 1996).

Computer-Mediated Learning

This next section will examine the potential relationship of each of these notions to computer-mediated instruction, based on what is known in general about computer-mediated communication and in particular on research conducted among second-language learners.

Input Perspectives and Computer-Mediated Learning

The input approach claims that (1) comprehension is necessary for acquisition to take place, (2) negotiation of meaning leads to interactional modifications that benefit acquisition and (3) noticing is beneficial to (and perhaps a requirement for) acquisition.

As to the first point, I can speak briefly from my own experiences learning Hawaiian. During oral class discussion, it is not infrequent that I become lost, and thus receive no benefit. However, during computer-mediated discussion, no matter how complex, I can always reread sentences, take out my dictionary, ask questions of the person next to me—in other words find some way to make the input comprehensible and thus benefit from it.

As to the second point, Pellettieri (1996)[4] investigated the interactional modifications that take place during synchronous electronic discussion under a variety of task conditions between pairs of intermediate students of Spanish. The study, based on the analytic framework developed by Varonis and Gass (1985), found that the computer-mediated interaction followed a number of patterns which have previously been found to take place in face-to-face interaction:

- All aspects of the discourse, the lexicon, morphosyntax, and content served as triggers for negotiations, but the great majority of negotiations were triggered by lexical items and content (cf. Pica, 1994; Varonis & Gass, 1985).
- Task type influenced type of trigger; tasks which included a more form-focused sub-component (e.g., having to jointly compose a piece of discourse) resulted in a higher percentage of morphosyntactic negotiations (cf. Loschky & Bley-Vroman, 1993).
- Amount of negotiation was affected by task type, with closed tasks

(having only one possible outcome) spurring more negotiation than open tasks, and difficult tasks (which required lexical items outside the vocabulary of most of the students) requiring more negotiation than easy tasks (cf. Pica, et al., 1993).

- A large number of embedded routines (negotiations within negotiations) indicated that participants went to extensive effort to ensure mutual understanding (cf. Varonis & Gass, 1985).
- Meaning negotiations, corrective feedback, and self-repair all contributed to students producing more target forms (cf. Gass & Varonis, 1994; Pica, 1994).

The extensive amount of changes toward target forms (resulting from negotiations, feedback, and self-repair), plus the fact that these changes sometimes resulted in correct use of quite complex grammatical constructions (e.g., clitic pronouns), led the researchers to conclude that

> *Our data suggest that because students have more time to process language in [networked communication] than in oral conversations, and because they can view their language as they produce it, they are more likely to "monitor" and edit their messages, all of which can result in even more "quality" interlanguage than there would be in a non-electronic environment (Pellettieri, n.p.).*

This study provides initial evidence that computer-mediated interaction not only includes many of the same interactional modifications that are believed to make oral negotiation beneficial, but, because they occur in a written environment, these modifications may be even more beneficial for enhancing language acquisition.

The third point within the interactional approach is the benefit of noticing. A presumably uncontroversial advantage of computer-mediated communication is that it allows greater noticing than oral communication. In my own experiences of using electronic communication to learn Hawaiian, I often noticed words on the screen that were so common but which I had never "caught" before in oral conversation. After I noticed them the first time in writing, I was able to try them out, and I also noticed them regularly from then on both orally and in writing. This is a feature which has also been commented on by a number of the Hawaiian students that I've interviewed this semester. One said, "Oral discussion you tend to forget but if it's down on [the screen], that's what you said, it's much better". Another explained:

> *You learn vocabulary, 'cause there's people who know some vocabulary that you don't know, so when you see it on the screen, you can look it up or something, or you can see how they're using the patterns and stuff when you read it, it's like you're reading the patterns over and over and over. It helps too, even if you don't write, I guess reading it.*

Output Perspectives and Computer-Mediated Learning

There are three main claims to the output perspective: (1) output helps fluency, (2) output improves accuracy and, (3) increased planning time for output allows students to push to higher levels of language complexity. The increase in accuracy is supposedly because output raises students' consciousness by helping them notice the gap between what they can say and what they want to say, helps students test out hypotheses, and provides a means for metalinguistic talk.

Computer-mediated communication is often used in L1 and L2 writing classes, in part to offer opportunities to increase written fluency. A number of students I have interviewed this semester have commented that they write more quickly in Daedalus Interchange as the semester has progressed; it is not clear in all cases to what extent this is due to increased comfort with the computer/typing or to increased comfort with the language. While it is reasonable to assume that computer-mediated discussion contributes to written fluency (if for no other reason than increased time on task), any claim that this transfers to oral communication is at this stage purely speculative.

A case study by St. John and Cash (1995) discussed later in this paper will illustrate how computer-mediated communication helped one learner to "notice the gap". As for testing out new hypotheses, this would seem to be assisted both by the more deliberative nature of computer-mediated communication as well as by the fact that it is for many students a less threatening medium than is face-to-face interaction and thus may encourage students to take more risks (Kelm, 1996; Kern, 1995; Warschauer, 1996a, 1996c).

Research has found, not surprisingly, that computer-mediated interaction by second language learners has proven more syntactically and lexically complex than face-to-face interaction (Kern, 1995; Warschauer, 1996a), likely due in part to the increased planning time. As for metalinguistic talk, this too would seem to be benefited by computer-mediated interaction, since such interaction facilitates post-hoc analysis and also real-time non-obtrusive interruption for a focus on form (i.e., I can compose a question about a linguistic point while other participants continue composing more communicative messages). This last comment points to a more general advantage of computer-mediated output: it can take place without interruption by other speakers, allowing each participant to communicate at his or own pace, and several participants to compose messages at the same time[5].

Sociocultural Perspectives & Computer-Mediated Learning

Three sociocultural perspectives were presented: interaction as socialization, interaction as speech activity, and interaction as apprenticeship. As to the first perspective, electronic communication seems to offer students excellent opportunities to be "small ethnographers", but only insofar as the norms of communication within the electronic realm. Little could be gathered about oral norms of communication from an electronic media.

As to the second point, the possibility of using computer-mediated communication as a vehicle for expressive talk should be beneficial to self-regulation. Since computer-mediated group discussion violates normal face-to-face rules of turn-taking (Ortega, 1996), students can take their time and effort to compose messages essentially for their own regulatory purposes without interrupting other participants.

The possibility of computer-mediated interaction for a modeling form of apprenticeship is well illustrated by St. John and Cash (1995). Their study used analysis of texts and learner self-reports to investigate the effects of a six-month e-mail exchange between a high-intermediate learner of German and a German native speaker. The learner systematically studied the new vocabulary and phrases that he read in his incoming e-mail and stored the e-mail messages for later study and use. When he wrote letters, he reviewed the past messages and made special effort to put to use the new vocabulary and phrases and phrases, a process which the authors claim dramatically assisted his language learning. Specifically, they claim that:

- Even though the native speaker offered no explicit linguistic feedback, the learner was able to make many corrections, especially at the lexical level, by noticing the difference between his usage and the usage of his partner[6].
- Fast progress occurred on the pragmatic level, with the learner successfully using a strategy of copying useful expressions and phrases that he found in the native speakers' messages.
- By the end of the six months, "striking" progress had also occurred at the syntactic level, with the learner using more complex structures, longer sentences, more correct word order, and "more natural German" (p. 193).

Finally, the potential of computer-mediated interaction to facilitate a text-mediational form of apprenticeship—that is, collaborative scaffolding of shared knowledge in the construction of new ideas—is one of the major reasons that computer-assisted discussion has become popular in L1 composition courses (for a review, see Susser, 1992). This potential is seen as stemming from the combination of the interactive features of conversation with the reflective aspects of written communication[7]. Schultz (1996) tested this potential in L2 writing classes, by comparing various combinations of face-to-face and computer-mediated peer review in eight intermediate French courses. She found that for most groups a combination of the two media worked best. Face-to-face interaction, with its fast pace and fluidity, allowed students to purse frequent "digressions that seem to feed positively into idea generation" (1996, p. 28). Written comments focused more in depth on one or two points, and these points were more likely to be incorporated into revisions. Taken together, the two modes allowed (in Schultz's view) superior co-construction of knowledge than either mode alone. The benefits of adding computer-mediated interaction as an additional component of peer review were more pronounced for students in French 4 classes than for those in French 3 classes; Schultz concluded that their higher level of language allowed them to make better use the electronic medium for sharing of ideas. Whether the same results would result from e-mail communication (rather than Daedalus) remains to be seen; L1 studies have indicated a superiority of e-mail to oral communication for peer review (Hartman, et al., 1991; Mabrito, 1991; 1992).

A longer treatment could deal in greater depth with the many points briefly touched on in this paper, as well as discuss some additional concerns about computer-mediated interaction (for example, that it can lead to hostile language known as flaming). For now though, I can only conclude by saying that, whether from an input, output, or sociocultural perspective, computer-mediated interaction appears to have a promising potential that deserves more study.

References

- Bayer, A. S. (1996). Orchestrating a text mediational view of Vygotsky in a college classroom. Mind, Culture, and Activity, 3(3), 165-184.
- Brooks, F. (1993). Some problems and caveats in 'communicative' discourse: Toward a conceptualization of the foreign language classroom. Foreign Language Annals, 26(2), 232-242.
- Brooks, F., & Donato, R. (1994). Vygotskyan approaches to understanding foreign language learner discourse during communicative tasks. Hispania, 77, 262-264.
- Brooks, F. B. (1992). Communicate competence and the conversation course: A social interaction perspective. Linguistics and education, 4, 219-246.
- Crookes, G. (1989). Planning and interlanguage variation. Studies in Second Language Acquisition, 11(4), 367-387.
- Donato, R., & Lantolf, J. P. (1990). The dialogic origins of L2 monitoring. In L. F. Bouton & Y. Kachru (Eds.), Pragmatics and language learning (pp. 83-97). Urbana-Champaign: University of Illinois.
- Donato, R., & Lantolf, J. P. (1991, March). Communication and social interaction: Conduit or cognitive activity. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Seattle, WA.
- Doughty, C. (1991). Second language instruction does make a difference: Evidence from an empirical study of SL relativization. Studies in Second Language Acquisition, 13(4), 431-469.
- Frawley, W., & Lantolf, J. P. (1984a). Second language discourse: A Vygotskyan perspective. Applied Linguistics, 6, 19-44.
- Frawley, W., & Lantolf, J. P. (1984b). Speaking and self-order: A critique of orthodox L2 research. Studies in Second Language Acquisition, 6(2), 143-159.
- Gass, S. (1990). Grammar instruction, selective attention and learning processes. In P. e. al. (Ed.),
- Gass, S. M., & Varonis, E. M. (1994). Conversation interactions and the development of L2 grammar. Studies in Second Language Acquisition, 16.
- Halliday, M. K. (1989). Spoken and written language. Oxford: Oxford University Press.
- Harnad, S. (1991). Post-Gutenberg galaxy: The fourth revolution in the means of production and knowledge. Public-Access Computer Systems Review, 2(1), 39-53.

- Hartman, K., Neuwirth, C., Kiesler, S., Sproull, L., Cochran, C., Palmquist, M., & Zubrow, D. (1991). Patterns of social interaction and learning to write: Some effects of networked technologies. Written Communication, 8(1), 79-113.
- Hymes, D. (1967). Models of the interaction of language and social setting. Journal of social issues, 23, 8-28.
- Kelm, O. (1996). Application of computer networking in foreign language education: Focusing on principles of second language acquisition. In M. Warschauer (Ed.), Telecollaboration in Foreign Language Learning: Proceedings of the Hawai'i Symposium. Honolulu, HI: University of Hawai'i Second Language Teaching and Curriculum Center.
- Kern, R. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and quality of language production. Modern Language Journal, 79(4), 457-476.
- Krashen, S. (1981). Second language acquisition and second language learning. Oxford: Pergamon.
- Krashen, S. (1985). The input hypothesis. New York: Longman.
- Krashen, S. (1987). Applications of psycholinguistic research to the classroom. In M. Long & J. Richards (Eds.), Methodology in TESOL: A book of readings (pp. 33-44). New York: Newbury House.
- Leont'ev, A. N. (1979). The problem of activity in psychology. In J. V. Wertsch (Ed.), The concept of activity in Soviet psychology (pp. 37-71). Armonk, NY: M. E. Sharpe.
- Long, M. (1980). Input, interaction and second language acquisition. Unpublished Ph.D. dissertation, University of California at Los Angeles.
- Long, M. H. (1989). Task, group, and task-group interactions. University of Hawai'i Working papers in ESL, 8(2), 1-26.
- Long, M. H. (1991). Focus on form: A design feature in language teaching methodology. In K. de Bot, R. Ginsberg, & C. Kramsch (Eds.), Foreign language research in cross-cultural perspective (pp. 39-52). Amsterdam: John Benjamins.
- Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), Handbook of research on language acquisition. Vol. 2: Second language acquisition. (pp. 413-468). New York: Academic Press.
- Long, M. H., & Porter, P. A. (1985). Group work, interlanguage talk, and second language acquisition. TESOL Quarterly, 19(2), 207-227.
- Long, M. H., & Sato, C. J. (1984). Methodological issues in interlanguage studies: An interactionist perspective. In A. Davies, C. Criper, & A. Howatt (Eds.), Interlanguage (pp. 253-279). Edinburgh: Edinburgh University Press.
- Loschky, L., & Bley-Vroman, R. (1993). Grammar and task-based methodology. In G. Crookes & S. Gass (Eds.), Tasks and language learning: Integrating theory and practice (pp. 123-163). Clevedon: Multilingual Matters Ltd.
- Lotman, Y. M. (1988). Text within a text. Soviet Psychology, 26, 32-51.
- Luria, A. R. (1961). The role of speech in the regulation of normal and

abnormal behavior. Oxford: Pergamon.

- Luria, A. R. (1976). Cognitive development: It's cultural and social foundations. Cambridge, MA: Harvard University Press.
- Mabrito, M. (1991). Electronic mail as a vehicle for peer response: Conversations of high- and low-apprehensive writers. Written Communication, 8(4), 509-532.
- Mabrito, M. (1992). Computer-mediated communication and high-apprehensive writers: Rethinking the collaborative process. The Bulletin(December), 26-30.
- Malinowsky, B. (1935). Coral Gardens and their magic. London: Allen and Unwin.
- Moran, C. (1990). The computer-writing room: authority and control. Computers and Composition, 7(2), 61-69.
- Ortega, L. (1994). The effect of planning in L2 narratives. Unpublished manuscript, University of Hawai'i.
- Ortega, L. (1995). Planning and second language oral performance. Unpublished master's thesis, University of Hawai'i.
- Ortega, L. (1996). Processes and outcomes of a computer-assisted classroom discussion: Interchange and instructed SLA. Unpublished manuscript, University of Hawai'i.
- Pellettieri, J. (1996). Network-based computer interaction and the negotiation of meaning in the virtual foreign language classroom. Unpublished manuscript, University of California at Davis.:
- Pica, T. (1983). Adult acquisition of English as a second language under different conditions of exposure. Language Learning, 33(4), 465-497.
- Pica, T. (1993). Communication with second language learners: What does it reveal about the social and linguistic process of second language learning. In J. E. Alatis (Ed.), GURT 1992: Language, communication, and social meaning (pp. 435-464). Washington, D.C.: Georgetown University Press.
- Pica, T. (1994). Research on negotiation: What does it reveal about second-language learning conditions, processes, and outcomes? Language Learning, 44(3), 493-527.
- Pica, T., & Doughty, C. (1985). Input and interaction in the communicative language classroom: A comparison of teacher-fronted and group activities. In S. M. Gass & C. G. Madden (Eds.), Input and second language acquisition (pp. 115-132). New York: Newbury House.
- Pica, T., Kanagy, R., & Faladun, J. (1993). Choosing and using communication tasks for second language instruction and research. In G. Crookes & S. M. Gass (Eds.), Tasks and language learning: Integrating theory and practice (pp. 9-34). Clevedon: Multilingual Matters Ltd.
- Platt, E., & Brooks, F. (1994). The "acquisition-rich" environment revisited. Modern Language Journal, 78, 497-511.
- Saville-Troike, M. (1982). The ethnography of communication: An introduction. Cambridge, MA: Basil Blackwell.
- Schmidt, R. (1990). The role of consciousness in second language

learning. Applied Linguistics, 11(2), 129-158.

- Schmidt, R. W. (1993). Awareness and second language acquisition. Annual Review of Applied Linguistics, 13, 206-226.
- Schmidt, R. W., & Frota, S. (1986). Developing basic conversational ability in a second language: A case study of an adult learner of Portuguese. In R. R. Day (Ed.), Talking to learn: Conversation and second language acquisition (pp. 237-326). Cambridge, MA: Newbury House.
- Schultz, J. (1996). Computers and collaborative writing in the foreign language curriculum:. In Unpublished manuscript, University of California at Berkeley.
- Sharwood-Smith, M. (1993). Input enhancement in instructed SLA: Theoretical bases. Studies in Second Language Acquisition, 15(2), 165-179.
- Skehan, P., & Foster, P. (1995). Doing the task better: How planning time influences students' performance. In Unpublished manuscript, Thames Valley University.
- St. John, E., & Cash, D. (1995). Language learning via e-mail: Demonstrable success with German. In M. Warschauer (Ed.), Virtual connections: Online activities and projects for networking language learners (pp. 191-197). Honolulu, HI: University of Hawai'i, Second Language Teaching and Curriculum Center.
- Susser, B. (1992). ESL/EFL process writing with computers. CAELL, 4(2).
- Swain, M. (1985). Communicative competence: Some roles of comprehensible input and comprehensible output in its development. In S. Gass & C. Madden (Eds.), Input in second language acquisition (pp. 235-53). Rowley, MA: Newbury House.
- Swain, M. (1993). The output hypothesis: Just speaking and writing aren't enough. The Canadian Modern Language Review, 50, 158-164.
- Swain, M. (1995a, March). Collaborative dialogue: Its contribution to second language learning. Annual conference of the American Association for Applied Linguistics, Long Beach, CA.
- Swain, M. (1995b). Three functions of output in second language learning. In G. Cook & G. Seidhofer (Eds.), Principles and practice in applied linguistics: Studies in honor of H. G. Widdowson (pp. 125-144). Oxford: Oxford University Press.
- Swain, M., & Lapkin, S. (in press). Problems in output and the cognitive processes they generate: A step towards second language learning. Applied Linguistics.
- Taylor, C. (1985). Human agency and language: Philosophical papers 1. New York: Cambridge University Press.
- Varonis, E., & Gass, S. (1985). Non-native/non-native conversations: A model for negotiation and meaning. Applied Linguistics, 6, 71-90.
- Warschauer, M. (1996a). Comparing face-to-face and electronic communication in the second language classroom. CALICO Journal, 13(2), 7-26.
- Warschauer, M. (1996b). Computer-mediated collaborative learning:

Theory and practice (Research Note No. 17). University of Hawaii, Second Language Teaching and Curriculum Center.

- Warschauer, M. (1996c). Motivational aspects of using computers for writing and communication. In M. Warschauer (Ed.), Telecollaboration in foreign language learning: Proceedings of the Hawai'i symposium Honolulu, HI: University of Hawai'i, Second Language Teaching and Curriculum Center.
- Wells, G. (1994). Text, talk, and inquiry: Schooling as semiotic apprenticeship. In N. Bird et al. (Ed.), Language and learning (pp. 18-51). Hong Kong: Institute of Language in Education and University of Hong Kong Department of Education.
- Wertsch, J., & Bivens, J. A. (1992). The social origins of individual mental functioning: Alternatives and perspectives. The quarterly newsletter of the laboratory of comparative human cognition, 14(2), 35-44.
- Wertsch, J. V. (Ed.)^(Eds.). (1979a). The concept of activity in Soviet psychology. Armonk, NY: M. E. Sharpe, Inc.
- Wertsch, J. V. (1979b). From social interaction to higher psychological processes: A clarification and application of Vygotsky's theory. Human Development, 22, 1-22.
- Williams, J. (1992). Planning, discourse marking, and the comprehensibility of international teaching assistants. TESOL Quarterly, 26(4), 693-711.

Sommaire

Dernière mise à jour le 03/03/98 - DIC/vb

1. There is a intentional ambiguity of the word "and" in this sentence. In the first sense, features which make input more comprehensible are thereby seen as facilitating language learning. In a second sense, features may be seen as facilitating language learning and secondarily also making input more comprehensible. In a third sense, features may be seen as facilitating language learning without necessarily making input more comprehensible. See Pica (1994) for discussion
2. This final function is consistent with sociocultural perspectives on interaction and negotiation as discussed in the following section
3. The notion that communication is principally input and output has been criticized widely as far back as 1935, when Malinowsky argued that "the false conception of language as a means of transferring ideas from the head of the speaker to that of the listener has, in my opinion, largely vitiated the philological approach to language" (Malinowsky, 1935, p.9). Others have claimed that continued use of a cybernetic input/output model serves to perpetuate an image of a "disengaged self...metaphysically independent of society" (Wertsch, 1979b, p. 68) and "hides from

view the way in which an individual is constituted by language and culture"(Taylor, 1985, p.8).

4. This study is based on the author's doctoral research.
5. This can also be viewed as a disadvantage, since it may encourage students to engage in a series of asocial monologues, rather than interactive dialogue (Moran, 1990).
6. Note also the relationship to the "notice the gap" hypotheses of the output perspective.
7. See Halliday (1989) and Wells (1994) for an overview of the relationship between speech and writing in education; see Harnad (1991) and Warschauer (1996b) for a discussion of how the features of speech and writing combine in computer-mediated communication.