Sociocultural Perspectives on CALL
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Introduction

Gregory Bateson, one of the greatest minds of the 20th century, raised a thought-provoking question in his book, *Steps to an Ecology of Mind* (1972). Where does a blind man's sensory mechanism end, asked Bateson. Does it stop at the end of his hand, at the end of his walking stick, or somewhere in-between?

Bateson's question serves to make us think about the relationship of humanity to its tools. This relationship is clarified by sociocultural theory, originating from the work of L.S. Vygotsky. Examining Vygotsky's contributions will help us understand how sociocultural theory can be applied to CALL.

Overview

There are three main aspects to Vygotskian thought, all of which are useful to understanding computer-assisted language learning. These are mediation, social learning, and genetic analysis.

Mediation. At the heart of Vygotskian and sociocultural theory is the concept of *mediation*, that is the notion that all human activity is mediated by tools or signs (Vygotsky, 1981; Wertsch, 1991). What is thus significant about various tools—such as computers, writing, or language itself—is not their abstract properties, but rather, how they fundamentally transform human action. For Vygotsky (1981), the incorporation of

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tools or *mediational means* does not simply facilitate action that could have occurred without them, but rather, by being included in the process of behavior, alters the entire flow and structure of mental functions. Later sociocultural theorists, such as Leont'ev (1979), developed the notion of mediation further to propose *activity theory*, which suggests that the appropriate unit of analysis for understanding human cognition and behavior is not simply the person, or even the person plus the tool, or rather the activities that people carry out when assisted by tools (see also Nardi, 1995). To answer Bateson's question, then, what is important for researchers to consider is not so much the blind man, or the stick, but rather what the blind man can do when using the stick.

As applied to CALL, this principal helps us understand how new technologies can transform prior forms of human activity. We do not now have a traditional form of writing plus the computer, but rather we have entirely new forms of writing that need to be taught in their own right (Shetzer & Warschauer, 2000, 2001; Warschauer, 1999)

Social Learning. A second cornerstone of sociocultural theory is the concept of the social origin of mental functioning. According to Vygotsky (1978), "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; the first, *between* people (*interpsychological*), and then *inside* the child (*intrapsychological*)" (p. 57, emphasis in original). Vygotsky further believed that this development principally took place through a form of apprenticeship learning; interaction with teachers or peers allowed students to advance through their *zone of proximal development* (i.e., the distance between what they could achieve by themselves and what they could achieve when assisted by others).

Vygotsky's Soviet contemporary, Bakhtin, applied these concepts to understanding linguistic interaction, and in particular how people learn through incorporating the language of others (1986) or responding to others' reactions. As Bakhtin wrote (in Volosinov, 1929/1973), "Words, intonations, and inner-word gestures that have undergone the experience of outward expression" acquire "a high social polish and lustre by the effect of reactions and responses, resistance or support, on the part of a social audience" (p. 92).

The concept of social learning is valuable for research on computer-mediated communication (CMC). It can help us understand both how learners incorporate others' linguistic chunks (phrases, collocations, etc.) in CMC (St. John & Cash, 1995; Warschauer, 1999) and also how they refine their writing for, and with input from, an authentic audience (Warschauer, 2002b; Warschauer & Lepeintre, 1997).

Genetic Analysis. A third major component of Vygotskian and hence sociocultural perspectives is that of genetic, or developmental, analysis. According to this concept it is possible to understand many aspects of mental functioning only if one understands their origins, or histories, and developmental process. These origins include microgenesis (the unfolding of particular events), ontogenesis (the development of the individual), sociocultural history, and even phylogenesis (the development of the species) (Vygotsky, 1962, 1978).

This point suggests that we can only understand CALL when we place it in its broader historical, social, and cultural contexts. For example, we cannot understand the types of motivation and attitudes that students have toward working with technology

unless we understand the importance of new technologies in today's economy and society (Murray, 1995; Warschauer, 1996a, 2000a).

Previous Research

CALL research from a sociocultural perspective has focused on the study of computer-mediated communication in language learning (for conceptual overviews, see Kern & Warschauer, 2000; Warschauer, 1997), largely as it relates to issues of culture, literacy, and identity. This research has taken place in three overlapping contexts: (1) technology-enhanced learning in individual language classes, (2) language learners' informal uses of new technologies outside the classroom, and (3) telecollaborative exchanges between classes.

Classroom Learning

In *Electronic Literacies*, (Warschauer, 1999), I reported on my study of individual technology-enhanced language and writing classes at the college level. The study sought to investigate the implementation of online and computer-based language learning in diverse situations. The study focused on four classes: (1) an undergraduate English-as-a-Second-Language (ESL) writing class of Pacific Island, Asian, and South American students in a small Christian college; (2) a graduate ESL writing class of Asian students in a public university; (3) a writing-intensive undergraduate Hawaiian language class of Native Hawaiian students in a public university; and (4) an undergraduate English writing class students of immigrant, international, and ethnically-diverse American students at a community college. Research methods were ethnographic, and included longitudinal participant observation; extensive, personal, repeated interviews with individual

instructors and students; and examination of electronic and paper documents and artifacts associated with the classes and the colleges in which they were taught.

Three major findings emerged from the study in relationship to second language learning (for a summary, see Warschauer, 2000b). First, the study revealed how the nature of teaching and learning activities were shaped by the institutional contexts and, in particular, by the underlying belief systems of the individual teachers involved. Simply put, teachers made use of the new technology to better put into practice their own underlying beliefs about the teaching and learning of language and writing (see Table 1). These beliefs were also reinforced by the nature and mission of their respective colleges and academic departments.

Insert Table 1 About Here

Second, the study highlighted how students' own goals in using technology differed from traditional CALL perspectives. Students perceived themselves not as carrying out computer-assisted language learning, but rather as learning both language *and* technology, that is developing new semiotic skills of electronic communication, research, and publishing (i.e., electronic literacies) that they saw as valuable in their personal lives and careers. The practice and mastery of new electronic literacies were tied up with students' academic aspirations, career goals, and the development and expression of their culture and identity.

Third, the study provided some evidence as to how best to integrate computer-mediated instruction in the classroom. In particular, the study found that *strong purpose activities* were much more successful in motivating and engaging students and enhancing their language skills than were *weak purpose activities*. This of course is not new

information; language educators have long known the value of purposeful learning. However, this study helped deepen that notion by linking the issue of purpose to specific manifestations of technology use. What was crucial was not only that the overall activity was socially and culturally relevant but also that the use of the electronic medium was appropriate for the activity and that students were encouraged enabled to use the medium-appropriate rhetorical features (for example, to design attractive and functional Web pages, rather than to merely take their paper essays and post them online).

Out-of-Class Learning

Much of students' use of new technologies takes place outside the classroom. A sociocultural approach, which attempts to address rather than factor out the broader social context, is especially helpful for examining these types of informal learning experiences. This is evidenced in the research by Lam (2000; 2003) that has extended and deepened some of the aforementioned concepts related to electronic literacy by examining them in informal realms.

Lam (2003) conducted longitudinal case studies of four Chinese immigrant youth in the U.S., examining their online language and literacy practices. In contrast to the youth's relatively unsuccessful experiences with English at school, all four gained status as English users online, where they created English-language Websites and communicated via e-mail and instant messaging first- or second-language speakers of English around the world. In doing so, they often used new hybrid forms of language that creatively combined media and/or language forms (e.g., drawing on both Chinese and English). They also developed and expressed new identities that were neither national (e.g., American) nor ethnic (e.g., Chinese-American) but rather based on

affiliation with like-minded people, for example, fans of Japanese animation who visited the *anime* Website created by one of the four.

In an analysis of this and related research, Lam and two colleagues (Kramsch, A'Ness, & Lam, 2000) pointed out that the very concept of authorship is changing in new media, with students empowered not only to author texts but also to help rewrite the very rules by which texts are created. They conclude that this ability, together with the authenticity of audience in online communication, creates new possibilities of *agency*, that is, the power to take meaningful action and see the results of one's decisions and choices (cf. Murray, 1997). The strong implication is that this kind of agency needs to be enabled in the classroom as well as in out-of-school communication.

Cross-Class Learning

A sociocultural perspective has also proved valuable for examining cross-class learning through multi-class partnerships known as *telecollaboration* (Warschauer, 1996b). A special issue of *Language Learning & Technology* journal (Belz, 2003b) provides four recent research studies on telecollaboration (Belz, 2003a; Kotter, 2003; O'Dowd, 2003; Thorne, 2003) that to various degrees draw on sociocultural theory. Thorne's article is particularly illustrative of how Vygotskian theory can shed light on technology-enhanced language learning. Thorne's research, also discussed in his doctoral dissertation (1999) and a co-authored article (Kramsch & Thorne, 2002), examines three case studies of telecollaborative exchanges between American and French students to highlight the complex interrelationship between mediational means, culture, and language.

The research points to the concept of *culture-in-use* (2003), a term that Thorne uses to describe how a particular mediational means takes on a certain meaning for participants based on their own culturally shaped usage patterns. For example, in this particular study, the use of e-mail took on a very different meaning for American and French participants. The Americans, who were generally from a more privileged background and had used electronic communication longer and more extensively, tended to view e-mail as a very formal and restrictive tool, and thus they strongly preferred instant messaging for informal and honest communication. The use of e-mail in the cross-class exchange thus came across as inauthentic to the American participants and hampered the value of the exchange product. This resonates with Warschauer's finding discussed earlier regarding appropriacy of medium, but adds the revelation that such appropriacy is located in particular cultural and historical conditions rather than in the medium itself.

Thorne's (2003) work also includes a very interesting discussion of how electronic cross-cultural communication contributes to the learning of a grammatical forms, including the distinction in French between the informal *Tu* and the formal *Vous* and the subtle differences between prepositions of location. Thorne's work in this area, as well as the work of others (Belz, 2003b; see further discussion of Tu/Vous use in telecollaboration projects in Belz & Kissinger, 2002; and Kern, 1996) deepens our understanding of social learning as carried out in computer-mediated projects.

Future Directions

As seen in the above examples, sociocultural theory has already proven valuable in developing an understanding of computer-mediated communication and its

contribution to language learning. As technology use continues to expand both inside and outside the classroom, there are many ways that this perspective can help guide further research relevant to language use and acquisition.

One important area of research that has just barely been begun (by Lam, 1999, 2002) is that of home-school connections in second language learning and technology use. Many language students around the world spend an immense amount of time online, often in their target language (especially in the case of English learners). Much more research is needed on the language and literacy practices students engage in out-of-school, and how school-based activities can be structured to maximize the benefits of out-of-school learning.

A second area of research involves comparisons in usages of different electronic media, exploring how medium shapes the linguistic interaction. Thorne (2003) hints at some of the differences in student attitudes between e-mail and instant messaging, and Sotillo (2000) has carried out an interesting study on the differences in syntax and discourse between an online threaded asynchronous discussion on a Web-based bulletin board and real-time discussion using Internet Relay Chat. Sotillo's study found that discourse is more unconstrained and free-flowing using real-time discussion, but that the asynchronous discussion featured more complex syntactical forms. There is no shortage of possible follow-up studies in this vein examining students' language use, attitude, and outcomes from different types of computer-mediated interaction.

A third area of research flows from the notion of electronic literacy, and is based on the concept of genre. Once we recognize that electronic genres are important to master in their own right, we need to better understand what those genres are and what

challenges are faced in mastering them. This can be learned both through corpus-based research examining the electronic products of both native- and non-native speakers, as well as through qualitative case studies of learning processes.

Finally, sociocultural theory can also be better applied to research on other aspects of computer-assisted language learning. The range of questions to be explored is immense and includes areas such as the comparative value of human tutors vs. computer-based tutors in helping learners through their zone of proximal development; an examination of the kinds of social learning which occur when students work together on a CALL program; and the role of social context in determining how language learners get access to new technology in schools (see, for example, Warschauer, 2003)

Issues

The application of sociocultural theory to computer-assisted language learning raises two important issues of scope. The first has to do with the definition and reach of the underlying perspective. The term sociocultural theory means many different things to different people. Some scholars emphasize concepts of mediation (see, for example, Donato, 1994; Lantolf & Pavlenko, 1995) and activity theory (Nardi, 1995).   Others emphasize communities of practice or situated learning (Lave, 1988, 1991). Some literacy scholars have applied sociocultural theory toward developing a perspective they call *New Literacy Studies* (Gee, 2000; Street, 1993). In other words, sociocultural theory refers to a fairly broad array of related perspectives. Researchers interested in this perspective will do best to read broadly and apply the particular perspective that matches their own interest, approach, and research questions. Good places to start include books

by Vygotsky (1962; 1978), Wertsch (1991), Wells (1990), Gee (1996), and Lave and Wenger (1991), and volumes edited by Moll (1990) and Lantolf (2000).

Secondly, the consideration of sociocultural theory calls into question the scope of language learning itself. Once broader contextual factors are brought into the equation, it is difficult to know when or where to draw the borders of inquiry. Just as Gregory Bateson has challenged us to think about where a blind man's sensory perception ends, we also are challenged by the question of where language learning ends, or where language learning research ends. For example, when ESL students learn to search the Web, are they learning technology or learning language? And when a researcher focus on the graphic elements of multimedia production in a second language, is that language learning research?

Conclusion

A common saying among CALL advocates is that the computer should not be viewed as an end in itself, but rather as just another tool to promote language learning. Recently though, a language teacher in English stood this mantra on its head when he said to me, "English is not an end in itself, but just a tool to be able to make use of information technology"(as cited in Warschauer, 2002a). Sociocultural theory allows us to dialectically link these seemingly contradictory perspectives. Yes, technology is just a tool, but, like all tools, it mediates and transforms human activity. Both teachers and researchers need to take into account both how this mediation occurs at the micro level, and also how it intersects with, and contributes to, broader social, cultural, historical, and economic trends. By applying the lens of sociocultural theory, we can begin to tackle that challenge.

Autobiography

Mark Warschauer is Associate Professor and Vice Chair of the Department of Education at the University of California. His books include *Electronic Literacies* (Lawrence Erlbaum, 1999), *Internet for English Teaching* (with Heidi Shetzer and Christine Meloni, TESOL Publications, 2000), *Network-Based Language Teaching* (co-edited with Richard Kern, Cambridge University Press, 2000), and *Technology and Social Inclusion* (MIT Press, 2003). He is currently researching culturally and linguistically diverse students' use of laptop computers in school and home environments.

Table 1: Contexts, Beliefs, and Technology Use

Institutional Context	Teacher Belief	Main Technology Uses
Undergraduate ESL course in a small religious college	Writing as structure and discipline	• Grammar exercises • Peer- and teacher-editing focusing on word, sentence, and paragraph structure
Graduate ESL course in a public university	Writing as academic apprenticeship	• Networking with peers and teacher • Participation in professional discussions
Undergraduate Hawaiian course in a public university	Writing as collective empowerment	• Partnering with other Hawaiians • Publishing of research about and for the community
Undergraduate English course in a community college	Writing as a communicative and vocational activity	• Computer-assisted classroom discussion • Production of authentic and practical brochures and Websites

References

Bakhtin, M. M. (1986). *Speech genres & other late essays*. Austin: University of Texas Press.

Bateson, G. (1972). *Steps to an ecology of mind: A revolutionary approach to man's understanding of himself*. New York: Ballantine.

Belz, J. A. (2003a). Linguistic perspectives on the development of intercultural competence in telecollaboration. *Language Learning & Technology, 7*(2), 68-117. Downloaded December 24, 2003 from http://llt.msu.edu/vol7num2/belz

Belz, J. A. (2003b). Telecollaboration. Special Issue of *Language Learning & Technology, 7*(2). Downloaded December 24, 2003 from http://llt.msu.edu/vol7num2/.

Belz, J. A., & Kissinger, C. (2002). The cross-linguistic development of address form use in telecollaborative language learning: Two case studies. *The Canadian Modern Language Review, 59*(2), 189-214.

Donato, R. (1994). A sociocultural perspective on language learning strategies: The role of mediation. *Modern Language Journal, 78*(4), 453-464.

Gee, J. (2000). Teenagers in new times: A new literacy studies perspective. *Journal of Adolescent and Adult Literacy, 43*(5), 412-420.

Gee, J. P. (1996). *Social linguistics and literacies*. London: Taylor & Francis.

Kern, R. (1996). Computer-mediated communication: Using e-mail exchanges to explore personal histories in two cultures. In M. Warschauer (Ed.), *Telecollaboration in foreign language learning* (pp. 105-119). Honolulu, HI: University of Hawai'i Second Language Teaching and Curriculum Center.

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.

Kotter, M. (2003). Negotiation of meaning and codeswitching in online tandems. *Language Learning & Technology, 7*(2), 145-172. Downloaded December 24, 2003 from http://llt.msu.edu/vol7num2/kotter/.

Kramsch, C., A'Ness, F., & Lam, E. (2000). Authenticity and authorship in the computer-mediated acquisition of L2 literacy. *Language Learning & Technology, 4*(2), 78-104. Downloaded December 24, 2003 from http://llt.msu.edu/vol4num2/kramsch/.

Kramsch, C., & Thorne, S. L. (2002). Foreign language learning as global communicative practice. In D. Cameron & D. Block (Eds.), *Globalization and language teaching* (pp. 83-100). New York: Routledge.

Lam, W. S. E. (2000). Second language literacy and the design of the self: A case study of a teenager writing on the Internet. *TESOL Quarterly*(34), 457-482.

Lam, W. S. E. (2003). *Second language literacy and identify formation on the Internet*. Unpublished doctoral dissertation, University of California, Berkeley.

Lantolf, J. P. (Ed.). (2000). *Sociocultural Theory and Second Language Learning*. Oxford: Oxford University Press.

Lantolf, J. P., & Pavlenko, A. (1995). Sociocultural theory and second languge acquisition. *Annual Review of Applied Linguistics`, 15*, 108-124.

Lave, J. (1988). *Cognition in practice: Mind, mathematics and culture in everyday life*. Cambridge: Cambridge University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

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. Sharpte.

Moll, L. (Ed.). (1990). *Vygotsky and education*. Cambridge: Cambridge University Press.

Murray, D. E. (1995). *Knowledge machines: Language and information in a technological society*. Longman: London.

Nardi, B. A. (1995). *Context and consciousness: Activity theory and human-computer interaction*. Cambridge, MA: MIT Press.

O'Dowd, R. (2003). Understanding the "other side": Intercultural learning in a Spanish-English e-mail exchange. *Language Learning & Technology, 7*(2), 118-144. Dowloaded December 24, 2003 from http://llt.msu.edu/vol7num2/odowd/.

Shetzer, H., & Warschauer, M. (2000). An electronic literacy approach to network-based language teaching. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice* (pp. 171-185). New York: Cambridge University Press.

Shetzer, H., & Warschauer, M. (2001). English through Web page creation. In J. Murphy & P. Byrd (Eds.), *Understanding the courses we teach: Local perspectives on English language teaching*. Ann Arbor, MI: University of Michigan Press.

Sotillo, S. (2000). Discourse functions and syntactic complexity in synchronous communication. *Language Learning & Technology, 4*(1), 82-119. Downloaded December 24, 2003 from http://llt.msu.edu/vol4num1/sotillo/

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.

Street, B. (1993). Introduction: The new literacy studies. In B. V. Street (Ed.), *Cross-cultural approaches to literacy* (pp. 1-21). Cambridge: Cambridge University Press.

Thorne, S. L. (1999). *An activity theoretical analysis of electronic foreign language discourse*. Unpublished doctoral dissertation, University of California, Berkeley.

Thorne, S. L. (2003). Artifacts and cultures-of-use in intercultural communication. *Language Learning & Technology, 7*(2), 38-67. Downloaded December 24, 2004 from http://llt.msu.edu/vol7num2/thorne/.

Volosinov, V. N. (1929/1973). *Marxism and the philosophy of language*. New York: Seminar Press.

Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press.

Vygotsky, L. S. (1978). *Mind and society*. Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1981). The genesis of higher mental functions. In J. V. Wertsch (Ed.), *The concept of activity in Soviet psychology* (pp. 144-188). Armonk, NY: M.E. Sharpe.

Warschauer, M. (1996a). Motivational aspects of using computers for writing and communication. In M. Warschauer (Ed.), *Telecollaboration in foreign language learning: Proceedings of the Hawai'i symposium* (pp. 29-46). Honolulu, HI: University of Hawai'i, Second Language Teaching and Curriculum Center.

Warschauer, M. (1996b). *Telecollaboration in foreign language learning: Proceedings of the Hawai'i Symposium*. Honolulu, HI: University of Hawai'i, Second Language Teaching and Curriculum Center.

Warschauer, M. (1997). Computer-mediated collaborative learning: Theory and practice. *Modern Language Journal, 81*(4), 470-481.

Warschauer, M. (1999). *Electronic literacies: Language, culture, and power in online education*. Mahwah, NJ: Lawrence Erlbaum Associates.

Warschauer, M. (2000a). The changing global economy and the future of English teaching. *TESOL Quarterly, 34*, 511-535.

Warschauer, M. (2000b). Online learning in second language classrooms: An ethnographic study. In M. Warschauer & R. Kern (Eds.), *Network-based language teaching: Concepts and practice*. New York: Cambridge University Press.

Warschauer, M. (2002a). A developmental perspective on technology in language education. *TESOL Quarterly, 36*(3), 453-475.

Warschauer, M. (2002b). Networking into academic discourse. *Journal of English for Academic Purposes, 1*(1), 45-58.

Warschauer, M. (2003). Technology and equity: A comparative study: Paper presented at the annual meeting of the American Educational Research Association, Chicago, April, 2003.

Warschauer, M., & Lepeintre, S. (1997). Freire's dream or Foucault's nightmare: Teacher-student relations on an international computer network. In R. Debski, J. Gassin & M. Smith (Eds.), *Language learning through social computing* (pp. 67-89). Parkville, Australia: Applied Linguistics Association of Australia.

Wells, G. (1990). Talk about text: Where literacy is learned an taught. *Curriculum Inquiry, 20*(4), 369-405.

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action.* Cambridge, MA: Harvard University Press.