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Researching Technology in TESOL: Determinist, Instrumental, and Critical Approaches

by Mark Warschauer

Early research on computers in the language classroom reflected what has been called a determinist approach (see Ebersole, 1995). From a determinist perspective, a computer is an all-powerful machine that in and of itself brings about certain determined results. Thus research on computer-assisted language learning (CALL) seeks to understand the overall "effect of the computer," often at the insistence of administrators who demand proof that the computer really works. However, as pointed out often before (see, for example, Garrett, 1991), the computer does not constitute a method and thus the computer's effect cannot be researched independently of the particular way the technology is put to use.

In contrast, an instrumental approach to technology is based on "the common sense idea that technologies are 'tools' standing ready to serve the purposes of their users....Technology, as pure instrumentality, is indifferent to the variety of ends it can be employed to achieve" (Feenberg, 1991, p. 5). Though the instrumental view appropriately takes the emphasis away from the machine per se, this view downplays how new technologies affect the broader ecology of the language learning environment. Thus language, learning, and the learner are all seen as unchanged by the introduction of new technologies. For an example of potential limitations of this approach, let's examine a statement made by Chapelle (1997) in an overview article on CALL research:

> Because the purpose of CALL activities is L2 learning, the most critical questions to be addressed about CALL are the following: What kind of language does the learner engage in during a CALL activity? How good is the language experience in CALL for L2 learning? (n.p.)

Chapelle is absolutely right that these are critical questions. But they are not the only critical questions. What this paragraph ignores is that L2 learning is itself transformed by the introduction of new technologies and that it is thus impossible to fully evaluate the language experience in CALL using general criteria adapted from oral or print-based activity. To know English well in the current era includes knowing how to read, write, and communicate in electronic environments. For most academic and professionals, learning how to compose electronic mail or make effective use of the World Wide Web are as essential English language skills as learning to speak on the telephone or make use of a library. We cannot assess how these new literacies are being acquired by tallying up syntactical, pragmatic, or lexical items, as is the common approach of much CALL research.

How then can we research the development of new technology-based communication skills and literacies? In contrast to determinist and instrumental approaches to technology, I would suggest that our research be guided by what Feenberg (1991) calls a critical theory of technology. A critical approach sees technology as neither a neutral tool nor a determined outcome, but rather a scene of struggle between different social forces. Street (1993; 1984) earlier demonstrated how this critical approach applied to the acquisition of print literacy, which in itself can be considered a technology. According to Street (1993), the acquisition of print literacy involves "challenges to dominant discourses, shifts in what constitutes the agenda of proper literacy, and struggles for power and position" (p. 9). This critical approach is equally important when investigating the acquisition of electronic literacies, which are highly dependent on access to expensive computer equipment and technological and language skills, and which can help bring about new power relations in a classroom or community. As Kaplan (1995) noted,

> The proclivities of electronic textsat least to the extent that we can determine what they aremanifest themselves only as fully as human beings and their institutions allow,…they are in fact sites of struggle among competing interests and ideological forces (p. 28).

Thus in researching the use of new technologies by second language learners, we might want to look at questions such as these: What new literacies does multimedia computer technology demand, both inside and outside the classroom? How does the development of these new literacies intersect with issues of class, race,

gender, and identity? How does the sociocultural context of particular educational institutions or communities affect the learning and practice of electronic literacies?

These questions do not lend themselves to the experimental designs that characterize deterministic and instrumental research paradigms, but are more effectively addressed by interpretive qualitative research such as that conducted by Street (1984) and Heath (1983). While experimental research by necessity must limit attention to contextual factors (in order to isolate a few variables for direct comparison), interpretive qualitative research is designed to explore sociocultural context through long-term participant observation and open-ended interviews within particular institutions and communities. This in-depth engagement facilitates examination of crucial but often hidden factors, such as underlying power relations in the classroom and community. Interpretive qualitative research also seeks to define the meaning of actions from the point of view of the local actors, rather than according to pre-ordained research categories (Erickson, 1986), and is thus especially helpful for investigating students' and teachers' evolving attitudes or sense of identity in changing circumstances--and attitude and identity have been shown to be critical components affecting language learners' use of computers (see, for example, Warschauer, in press).

Interpretive qualitative research, often but not exclusively based on ethnography, has gained more prominence within the field of TESOL in recent years (see, for example, the fall 1995 and fall 1997 special issues of TESOL Quarterly). However, there has as yet been insufficient qualitative research on technology-enhanced language learning. Such research could examine not only what language is used by learners in particular technology-enhanced environments, but also how computer-mediated language and literacy practices are shaped by broader institutional and social factors, as well as what these new practices mean from the perspective of the learner (see, for example, Warschauer, 1998; 1999).

I am not suggesting that critical ethnography replace all other types of research on technology-enhanced learning. We don’t need a new monopoly paradigm of research, but rather a multiplicity of approaches that allows us to fully address the many questions that use of new technologies poses. Indeed, some of the best language and literacy research combines a variety of methods (e.g., quantitative and qualitative linguistic analysis, discourse analysis, interviews, participant-observation) or even approaches (see, for example, the ground-breaking study on the psychological dimensions of literacy by Scribner & Cole, 1981, which made use of both ethnography and experimentation).

Technology critic Neil Postman (1993) wrote that "fifty years after the printing press was invented, we did not have old Europe plus the printing press. We had a different Europe" (p. 18). I would suggest that 50 years after the computer was invented, we do not have old language learning plus the computer, but we have a different language learning. If we are to fully understand the interrelationship between technology and language learning, we have to investigate the broader ecological context that affects language learning and use in today's society, both inside and outside the classroom. This can be best accomplished if we expand our research paradigms to engage in critical qualitative research which attempts to take into account broad sociocultural factors as well as questions of human agency, identity, and meaning.

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