Rapid evolution of communication technologies has changed language pedagogy and language use, enabling new forms of discourse, new forms of authorship, and new ways to create and participate in communities. The first section synthesizes research findings from three current areas of research: computer-mediated communication and electronic literacies. The second section develops implications for teaching and research, highlighting the importance of the teacher, new understandings of language and communication, critical awareness of the relationships among technology, language, culture, and society, and new trends in research methods.

We live, work, learn, and play in a rapidly changing communication landscape. Cell phones transmit text messages and photos as well as voice, small digital cameras take sound videos as well as stills, handheld —personal digital assistants— allow us to connect to the Internet from any location served by a wireless network, webcams provide visual contact between Internet interlocutors. Images, animation, color, and visual design interact with language in Web-based communication. E-mail, instant messaging, chat rooms, blogs, and wikis enable new forms of discourse; new forms of authorship; new forms of identity construction; new ways to form, choose, and maintain learning communities and affinity groups that cross national boundaries.

Do computers improve language learning? It is not, however, a question that can be answered with a simple yes or no, any more than we could answer a similar question about the effectiveness of books, films, newspapers, or study groups. As with other learning resources, we need to refine the question to examine the myriad ways in which computers are being used, by whom, in what contexts, and for what purpose. When these parameters are pinned down, the answer is sometimes yes, often no, sometimes yes for some learners but not for others.

There are three problems with assessing the effectiveness of technology. First is the problem of defining what counts as technology [videos, tutorials, and chat rooms, for example, are obviously very different]. The second problem is separating a technology from its particular uses. Because any given technology may be used in a variety of ways, some effective, some not, it is difficult to generalize about the effectiveness of a technology itself. The third issue has to do with the effects of other mediating factors, such as the learners, the setting, the task(s), and the type of assessment.

These days, given the common presence of computers in many institutions of learning, we may be past the point of deciding whether or not to use computers in language teaching. But we still need to know how to make the best uses of them to accomplish specific goals. Moreover, it is important to ask what it means to use computers for learning and using a language, that is, to reflect critically on the social, cognitive, cultural, as well as educational implications. If we look at language learning from a broad perspective, we will be less interested in whether learners successfully acquire a particular linguistic structure and more interested in how they attempt to deal [sometimes successfully, other times less so] with specific communicative situations and with the linguistic, cognitive, social, and material resources available to them.

This perspective puts the accent on learners' agency and teacher responsibility rather than on the effect of technology itself. The role of technology in can be thought of in terms of the metaphors of tutor, tool, and medium. In the tutor role, computers can provide instruction, feedback, and testing in grammar, vocabulary, writing, pronunciation, and other dimensions of language and culture learning. Voice interactive can also simulate communicative interaction. In the tool role, computers provide ready access to written, audio, and visual materials relevant to the language and culture being studied. The Internet and databases can serve as tools for research. In the medium
role, technology provides sites for interpersonal communication, multimedia publication, distance learning, community participation, and identity formation.

Many observers note that CMC language is often less correct, less complex, less coherent than other forms of language use. CMC provides learners with the opportunity for social interaction, but because the interaction takes place primarily in writing, it also provides learners with ample opportunity to focus on form and content. A number of studies have explored the question of how best to promote meaning negotiation online. Smith studied the relationship between negotiation routine complexity. He found that the complexity of negotiation routines did not influence uptake and that degree of uptake bore no relationship to vocabulary learning. Smith hypothesizes that uptake may play a diminished role in CMC and that we may need to attend to more subtle indications of acquisition in CMC environments.

What is important about literacy on the Internet is not just the ability to read and write in comprehensible language but also the ability to negotiate new roles and identities. Identity construction and socialization are inherently intertwined with language and can have either a facilitating effect [e.g., Lam's subjects] or a constraining effect [e.g., when limited to local community or school setting] on the resources learners come to acquire and use.

I showed great interest to the research of Lam that curried in 2003. The scientist presents an ethnographic case study of Almon, a Chinese immigrant teenager who felt negatively about his English ability despite living in the United States for 5 years. Through instant messaging (ICQ) and then through creating his own Web site about a Japanese pop music idol, Almon discovered his own expressivity in English as well as a newfound solidarity with his Internet peers. Lam argues that by appropriating, rearticulating, and redesigning discourses and narrative roles for his own purposes, Almon developed a new identity that had not been available to him in his immediate community and school in the United States. A key contribution from this study is the notion of textual identity for understanding how texts are composed and used to represent and reposition identity in networked computer media. In her larger dissertation study, Lam (2003) presents three additional case studies of Chinese immigrant youths, showing how they also came to occupy new social positions and identities by appropriating new discourses in online environments.

Lam's research is important because it considers not only how social contexts shape language use in online environments but also, and most important, how online communication shapes social contexts and participants' identity formation.

Two reasons teachers often cite for failing to fully implement education technology in their lessons are the —digital gap] between students — some have computers and internet connectivity at home and some don’t — and the difficulty of accessing — thanks to legally mandated internet filters — the full range of web materials in school.

Technology-based language teaching is not a method but is integrated into various pedagogical approaches. Most research to date has focused on communicative task-based, project-based, and focus-on-form approaches in CMC environments, but the literature has begun to address uses of corpora in data-driven learning. Because the dynamics of interaction in online environments differ from those in face-to-face interaction, teachers must be prepared for new ways of structuring tasks, establishing exchanges, guiding and monitoring interaction, and evaluating performance, not to mention mastering the relevant computer applications. In the area of intercultural CMC exchanges, success has been mixed, but a number of researchers have made recommendations for optimal results.

Over the past 15 years, we have learned a great deal about the features of learner interactions and language use within online environments, but we still know little about how those abilities might be transferred across different environments, communicative genres, and modalities. For example, does proficiency in e-mail carryover to instant messaging or chat, or even to essay writing? What benefits might multimedia authoring have for linguistic expression (or communicative potential)? Is there a relationship between, say, digital storytelling and performance of writing or face-to-face speech?
We know the importance of teaching electronic literacies, but what are the implications of electronic literacies for curriculum? How might we need to reframe or reconceptualize learning tasks? What are the implications for the way learners' performance is assessed?

As future language educators, our job is to reflect on norms—to explore their underpinnings, their contexts of operation, and their implications—not only to make the norms understandable to our students but also to model for them the very process of reflecting critically on the social practices they participate in and observe. Technology offers us a means by which to make the familiar unfamiliar, to reframe and rethink our conceptions of language, communication, and society. It is through this process of analysis and reflection that we can best decide how we can and should use technology in language learning and teaching.

References