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UNITED STATES

The Challenge and Opportunity of Technology: An Interview with Mark Warschauer

Mark Warschauer is Vice Chair of the Department of Education at the University of California, Irvine and a faculty associate at the university's Center for Research on Information Technology and Organizations. He has previously taught and conducted research at the University of California (Berkeley), the University of Hawaii, Moscow Linguistics University, and Charles University (Prague). Dr. Warschauer's research focuses on the role of information and communication technologies (ICT) in second/foreign language learning and teaching; the impact of ICT on literacy; and the relationship of ICT to institutional reform, democracy, and social development. He is the founding editor of the journal *Language Learning & Technology* and editor of the *Papyrus News* email list. This interview was conducted by the editor-in-chief of the *Forum* on April 9, 2002 at the international TESOL convention held in Salt Lake City, Utah.

WPA: *Can you tell us how your career in second/foreign language teaching began?*

MW: After I graduated from college, I traveled in Mexico and Central America and learned some Spanish. My first job when I came back was as a Spanish bilingual teacher aide in an elementary school in San Francisco helping students with math and English. I enjoyed that very much, and I got my secondary teaching credential and became a bilingual teacher. I worked as a teacher for a number of years. Eventually I went back to school and got my M.A. and Ph.D. in language education-related fields.

WPA: *What advice would you give teachers who are just beginning their careers as English language teachers?*

MW: Try to get yourself to a professional conference. The first time I went to an international TESOL conference, it had a huge impact on my career to realize that I was part of this large international community of dynamic people teaching English, plus attending all the sessions, seeing all the materials, and getting all the new ideas. I try to go every year if possible and to other local and national conferences; it doesn't have to be an international conference. To really become part of the profession rather than someone who just happens to work in a school teaching.

WPA: *What do you enjoy most about teaching?*

MW: I really enjoy the communication and interaction and just having a chance to talk with people from so many parts of the world. For several years, I taught adult immigrants in the San Francisco area. Now I don't teach ESL, I do teacher training and research, but I still enjoy being in touch with people from the English language teaching community around the world. I hope that some readers of the *Forum* will send me email and tell me about what they're doing.[1]

WPA: *This is not a trick question, but a clarification question because I think a lot of readers of the Forum may be wondering, too. "World Wide Web" and "Internet" are used interchangeably, but my understanding is they're actually slightly different.*

MW: It is a little confusing especially now, because some of the things that we used to do on the Internet, we're now doing on the World Wide Web. The Internet refers to the bigger thing. So, anytime you get online, you send email, or you hook up—what you're hooking up to is the Internet. Then, when you get on the Internet and you launch your browser program, Internet Explorer, Netscape Navigator, or any other browser, you're going on the World Wide Web. Traditionally, some things like email were done on the Inter-net but not necessarily on the World Wide Web. Now, of course, with Hotmail and Yahoo Mail, many people are doing email and chatting on the Web and that's why there's confusion between the two. Technically, the Internet is the broader communications protocol that allows people to connect to the World Wide Web, and the Web is a just a part of it, but an increasingly large part of it.

WPA: *Having asked you to distinguish between the two of them, is it really important to make a distinction?*

MW: No. I remember back about eight or nine years ago when I first started doing workshops on using the Internet. We talked about things such as "archie" and "gopher," and there were all these terminology changes over the years. Some people get really hung up on them but it's just like the difference between a blackboard and a chalkboard and a white board. I mean, you have something to write on and you should concentrate on what you write there. What you call it is not really that big of an issue.

WPA: *Your 1999 book is called* Electronic Literacies: Language, Culture, and Power in Online Education *(published by Lawrence Erlbaum). Can you explain the term "electronic literacies"?*

MW: By "electronic literacies," I'm referring to the reading and writing, and the knowledge, skills, and practices that take place in the electronic medium; the way people read and write using computers and the Internet. We use the term "literacies" because there are many kinds of literacies. The literacy involved in reading a comic book is very different from the literacy involved in writing a doctoral dissertation.

There are several kinds of literacy that make up electronic literacies. There is information literacy, being able to navigate the Internet and find, then critically analyze and make use of information found there. There is what might be called computer-mediated communication literacy, being able to use the Internet as an information tool to send an email message that has an impact and is appropriate for the circumstances. There is multimedia literacy, which is knowing how to create texts on the Internet combining different multimedia and also to read and interpret media to make a message.

WPA: *In the book you write: "...it is in schools and colleges where people will become more or less knowledgeable users of electronic media, critical or less critical readers and writers in an electronic era" (p. 21). Getting back to the idea of multiple literacies, doesn't this put an unfair burden on teachers? In addition to teaching their content areas, they have the responsibility to teach computer skills.*

MW: It seems that way now because they're so new, and teachers are catching up. But the medium is not really separate from the content. In the past, we didn't think that we had to teach English and we also had to teach books and magazines and libraries. Part of teaching English was teaching people how to understand books, how to use a table of contents and an index, how to write on a piece of paper legibly, etc. Because electronic literacies are new, they seem so demanding and challenging, and they are in some ways. But let's take things one step at a time. This doesn't mean that everything that everybody has been doing should be thrown out. You can add on gradually to what you're already doing and accomplish a lot.

WPA: *This next question is from the point of view of students. A student who wants to learn English now has got to learn the keyboard and learn to use a computer. Is it unfair to put this responsibility on them?*

MW: It's a responsibility, but it is also an opportunity. I studied French for several years and the first time I really got excited and motivated about French, and actually learned it, was when I was traveling in Europe and I spoke French to communicate. I've seen language learners, children who know very little English, in different parts of the world have the opportunity to actually communicate with people in other parts of the world in English and become tremendously excited. Kids love computers. I don't think the situation is that we have to force kids into the computer lab. It's that we can barely drag them away from the computer lab.

WPA: *Do you find the same holds true for all age levels? That the computer is intrinsically interesting to students?*

MW: Everything has to be evaluated in terms of the opportunity. There might be a situation, let's say, English for occupational purposes, where a person such as a waiter or tour guide mostly needs conversational English. Of course, there's some computer activity you could develop for them but computers are not essential. At this point in time, the computer is not yet essential for all communication. It's principally a realm of written communication. For people in schools and universities who are developing English for academic purposes, I would say that computers and the Internet are essential.

WPA: *Would it be fair to say that electronic literacy is now a life skill?*

MW: Very much. It depends on the circumstances and the place where you are living, and what you need English for. For most teachers who are readers of the *Forum,* computer skills and using English online are probably very valuable skills for professional reasons.

WPA: *In your article "The Changing Global Economy and the Future of English Teaching"* (TESOL Quarterly, *Autumn 2000) you describe various attitudes people have toward computer technology and human problems. For example, the "techno-optimists" believe computers will solve problems; the "techno-pessimists" think computers can't solve our problems (p. 525). Do you think the divide is growing between those who have the resources and those who don't? How can we discuss the "digital divide" without becoming techno-pessimists?*

MW: Again, I think it's a challenge but it's also an opportunity. I have seen wonderful projects done with a single computer. There was a teacher in Romania (this was seven or eight years ago and the Internet barely existed in Romania). He brought his home computer into the classroom and helped his elementary school children hook up with elementary school children in Canada. I heard a very good expression the other day. It was something like "A good toy is 90 percent child and 10 percent toy." I think a good pedagogical device is 90 percent learner and 10 percent device. Often, we put too much emphasis on having the fanciest equipment and how many ROM and how many RAM, when sometimes with just one simple computer we can do so much.

WPA: *Let me ask you a follow-up question. Given there are classes where there is only one computer available for all the students or perhaps no computer, what's your favorite piece of low-tech technology?*

MW: My favorite piece of low-tech technology has nothing to do with computers. It's the guitar. Does a guitar count as a technology?

WPA: *Absolutely!*

MW: When I used to teach adults, once a week I would bring in my guitar and we would sing songs together. That was a lot of fun. In terms of low-tech computer technology, email is fairly low-tech. You don't need any multimedia. You can get a computer for $100 that can do email. I think there is a lot that can be done with only email.

WPA: *Getting back to the guitar, what kind of music did you play and did the students enjoy most?*

MW: We used to play the Beatles, Simon and Garfunkel, and Bob Dylan—60s and 70s music.

WPA: *I think in every school where I have taught there has been a serious Beatles fan.*

MW: Their music is very singable and is known by students around the world. We had a great time. It's great for learning English, too.

WPA: *Let me ask at the other end of the spectrum. What's your favorite piece of high-tech teaching technology?*

MW: I think digital video is exciting. What you can do with the Macintosh and the iMovie software! You can have youngsters and adults, people of any age, very easily making movies and editing them. It's great not only for language learning but for media skill development and cultural development to have learners make their own movies.

WPA: *Can you tell us one thing that all language teachers can and should do with educational technology in their classes?*

MW: One of the points I was trying to make earlier is that we have to do what is appropriate in our own circumstances. It might be the case in your circumstances that it's not appropriate to use computers or the Internet at all.

There is no computer program that everybody should use, but I think there is an underlying philosophy that's important for all teachers, which is: help students master the technology for their own active mastery and empowerment rather than thrust things on students. Whatever technology it is, let the learners learn to create with it. I mean, even with the tape recorder, rather than using it just to play tapes for children, they can record their own stories or they can interview people. Whatever the technology is, let's involve learners in active use, constructive use, and mastery of the technology for producing content rather than just passively receiving it. Borrowing from a metaphor of my colleague, Daniel Pimienta, anybody can sit "behind a screen." Let's instead put our students "in front of a keyboard."

WPA: *Getting back to your book* Electronic Literacies, *you and other authors (for example, David Crystal in* Language and the Internet, *Cambridge University Press, 2001), have written about a fourth revolution in human communication. The first three revolutions you cite are language, writing, and print. Are we at the beginning of a fourth revolution in human communication?*

MW: Yes, I think we are. One area, for example, is the scholarly production of knowledge. It used to be, only 20 or 30 years ago, if a scientist came up with a new discovery, most people would not hear about it until it was published in a journal and that process might take a year or two. Now, a scientist is communicating with other scientists around the world immediately on the Internet. Just think about how much faster the production of knowledge can take place. So, I do think we are going through a revolutionary period in communication that matches the development of the printing press.

WPA: *Much faster, however.*

MW: Yes, much faster because the printing press took hundreds of years to spread and have an impact. I don't know the latest numbers, but now well over 10 percent of the people in the world are using the Internet and in another 20 years, it could be 30, 40, or 50 percent.

WPA: *Electronic journals are offering much faster publication than print journals. If there is more knowledge available, there must be more... what should I say...?*

MW: Junk.

WPA: *Yes, junk. There is faster production of good as well as bad information.*

MW: That's why critical literacy is so important. And this isn't a new concept; this isn't a post-Internet concept. Long before the development of the Internet, Paolo Freire and many other people were talking about critical literacy. Critical literacy has existed as a teaching concept for at least 50 years, but it has become a much more important concept today, I would argue.

When I was growing up in Los Angeles, California, if we were assigned to do a paper, we went to the library to get materials and do research. The information in the books had been vetted twice, once by the publisher who decided to publish it, and again by the librarian who decided to stock it in the library. Of course, we had to think critically about it, but it wasn't complete nonsense or junk. Now, if children have to do a paper, the first place they want to do research is the Internet. That can be a problem, because the material on the Internet hasn't been vetted.

WPA: *How do you respond to the prescriptive grammarian or linguist who proclaims that the immediacy of email and the use of emoticons [2] and other features of electronic communications are, in fact, debasing our language?*

MW: We could also say that the immediacy of conversation is debasing the language, if you've ever done syntactic analysis of a typical conversation! I think the broader point is that in most situations in schools and universities, we are striving to help our students achieve what might be called academic literacy. We want them to argue, to persuade, to use sophisticated language, and that doesn't always match the type of language that appears in a chat room.

It's up to us, the teachers, to make use of the Internet in ways that match our pedagogical goals. Let's say your students in one country are communicating with students in another country about a project. You might let them have informal discussions because they can develop basic conversational skills that way. But have the project gear up to higher standards. Have the students interview each other, then write their interviews and publish a newsletter together. In the online newsletter, you would expect more sophisticated writing.

You mold the medium. Just like we wouldn't put children in a room and say, "Talk and learn," you also wouldn't just put them in a chat room online and say, "Talk and learn." You have to deploy the Internet towards your own pedagogical ends.

WPA: *Could we say that emoticons and these other features of immediacy indicate the language we use in email is just a different register?*

MW: Exactly. That would be a very good learning activity in school: have students write an email message in several different registers. For example, to tell a friend you can't come and meet him, to tell your professor you can't come to class, and to tell your boss you can't come to work today.

WPA: *I want to change the subject slightly, from Internet and the Web to a different impact computers are having. As software for translation gets more reliable, is our profession feeling the effects of improvements in machine translation?*

MW: It certainly will, but it's hard to predict what the long-term effects will be. In the short-term, I think that people are naturally going to try to machine translate their language first to see what the computer comes up with. A Chinese person who is writing something in English might write it in Chinese and translate it by machine first to see what it looks like.

One of the ways that I think we can respond to this as teachers is to take advantage of these machine translations, which, at this point, are very awkward and to teach students to edit them. What a great pedagogical tool: give students a bad translation that was done by translation software and teach them how to convert it into a good translation, then let them analyze what the differences are.

WPA: *Can you tell us about your new book published by the Massachusetts Institute of Technology Press?*

MW: Sure. The title of this book is *Technology and Social Inclusion: Rethinking the Digital Divided.* Of course, it covers language, literacy, and education, but it goes further to look at the way new technologies can serve human and social de-

velopment. The main point of the book is that we shouldn't "fetishize" the machine itself, that the computer is only one element and one small element of the bigger package of how technology has an impact on people's lives. That package includes literacy skills, content available on the Internet, training, community relationships, goals, and leadership.

I think the way this applies to school is: don't think that when you've ordered your hardware, or even your hardware and software, you've done most of the work of integrating computers in education. For example if you start with teachers who have a very good approach to project-based curriculum, they will be able to very easily integrate computers into that. But if you start with computers without a good curriculum or a good pedagogy, the computer itself won't help very much. The hardware is just one part of the broader package of what technology can do, and all those other parts need as much as or more attention than the computers.

WPA: *Let me ask a hypothetical question, Mark. If you were given time and unlimited resources to conduct a research project in foreign language teaching or applied linguistics, what would you study?*

MW: I'm fascinated with the impact that informal use of the Internet has on language learning abilities. So many people are reading and writing English outside the classroom without any assignments from their teacher. Before I came to the University of California at Irvine, I was working in Egypt for three years. A number of people I spoke with and interviewed there told me that spending a lot of time online helped them improve their English very much.

I would love to do ethnographies, that is, longitudinal qualitative research with individuals from different countries and from different walks of life, to look at how people are using computers and the Internet in their home, work, and school environments. I would look at how their informal uses of English on the Internet contribute to their formal knowledge as it relates to what they're doing in school, for example.

With unlimited resources, maybe you could choose a dozen people in each of 20 countries and do a comparative study looking at whether people who use computers and the Internet at home learn English earlier and faster, and whether they tend to learn more at home or in school. In situations where people are learning in the home environment, what can you do in a school environment to complement that?

WPA: *Hotmail and Yahoo email as language learning tools.*

MW: There you go! You asked earlier about low-tech. Email is low-tech computer use. Some Web-based email is even free.

WPA: *I'm happy to report that in cooperation with TESOL, the U.S. Department of State is going to print and distribute your 2000 book* Internet for English Teaching *(with co-authors Heidi Shetzer and Christine Meloni). In the book you mention that the Web works best when its strengths are exploited and integrated rather than resisted. For example, when students are allowed to pursue topics of their own choosing, they're very enthusiastic and motivating. How can a teacher exploit students' own interests while making sure that they don't get sidetracked with technical glitches on the computer or end up surfing the Internet all day instead of using their time productively?*

MW: I'm a firm believer in high-quality products. Whatever computer-based activity you assign should result in the students producing high-quality products. Of course, you can't expect them to create a product without giving them a lot of support and structuring the activity. You have to pay a lot of attention to the language issues involved. Most students want to write expertly if they're going to publish something on the Web; they want it to be accurate.

WPA: *So you need to start with your final product—What do I want my students to accomplish?—and from there, plan how to reach the goal.*

MW: Yes. At one school in California, instead of calling the computer lab a computer lab, they call it a production lab, because it is a place where students go to produce high-quality work.

WPA: *Is there an inspirational anecdote from your career that you would like to share with readers of the* Forum?

MW: Yes, it's about a young teacher that we worked with in Egypt, where I was the director of educational technology on a very large U.S. government-funded teacher training program called CELT: Computers in English Language Teaching. Basically, we were trying to build up a cadre of experts in using technology in English language teaching so they could spread the word among other teachers. Part of being in CELT was to go for training in the United States, so it was very competitive to get into the program. There was one teacher who stood out in the program, named Ahmed Khater. And he was blind. Even though he was blind, he was better at using computers than anybody else in the entire program. He depended on using computers a lot because he couldn't read a piece of paper, but he could scan it and then use text-to-speech software. He really took advantage of the computer to overcome some of the difficulties of blindness.

Ahmed was absolutely amazing. You could send him an email and he'd send you back a lengthy email in 10 minutes. What he knew, self taught, about software for blind people and how to set up computers for blind people! He was one of our best participants in the CELT program.

I learned about a year after I left Egypt that people from UNESCO heard about him. Actually, somebody interviewed him for the newspaper. And then people from UNESCO invited him to consult on setting up a special information technology center for the blind within the Alexandria library. You might have heard about the huge library that they're rebuilding in Alexandria in honor of the library that was there almost 2,000 years ago. So now this teacher is having a national impact in Egypt on issues related to overcoming disability with technology and multiple language material.

WPA: *Looking ahead to the next 10 years, where do you see the field of computer assisted language learning (CALL) going?*

MW: I think there are two big components of CALL. One is language learning software and the other is online activity on the Internet. I think that we'll see a combination of these things in a couple of ways. First, a lot more language learning software will be moved over to the Internet platform as bandwidth becomes higher. Secondly, because of that, we will be able to combine more traditional language learning activity with communicative activity, all combined in the same Internet software. I don't know what it will be called, but I think we're going to bridge the gap between Internet-based learning activity and language learning software.

WPA: *What do you think will be the CALL issues that are provoking discussion and debate among teachers and researchers in the future?*

MW: One area that's becoming quite important is learners' use of new corpora. A corpus is a set of texts that have been put in a format on a computer. (Corpora is the plural of corpus.) Now there are text-based corpora, so if you don't know, for example, whether a verb is usually followed by this preposition or that preposition, you can search through 10 million words from British newspapers to see how that particular verb has been used in the past.

Now all of these corpora only take advantage of printed texts. Building up corpora of oral texts can be done in many different ways, for example, by recording television announcers or by having people wear microphones all day recording their speech. These oral corpora are not only put in written form, but they're put in oral form, too, meaning that when you search for something, you can see it and you can also hear it.

All of this is in a very primitive stage now, but the technology will be developed in perhaps five or ten years and the amount of corpora will expand, plus the computer's ability to sort it, find it, and hear it will expand. I think one

issue that people will be debating and discussing is whether and how learners can make use of this sort of authentic language data that they themselves can search for and find.

It's kind of a tricky issue because it's been overestimated by some, at least in terms of what can be done today. It sounds a lot better in theory than actually having somebody look through all the data and being able to make sense of what they find. But who knows? Five or ten years from now, it will get better and be more useful to more people.

WPA: *If you look at the interview with Diane Larsen-Freeman (in the October 2001 issue of the* Forum), *she mentions corpora and how they might affect language teaching.*

MW: That's another level, which is from the teaching point of view and the research point of view. We have a lot more information available about how language is really used. So even if the teacher doesn't tell her students to go to the computer files and examine corpora, concordancing software allows this. The teachers themselves might want to develop their materials by using these concordancers because at least they will know they're coming up with real life examples that have been found in the newspaper.

WPA: *Do you care to make any predications about the future of computers and educational technology apart from what you've already said?*

MW: Sure. Somebody once asked me what technology is. One way of defining it is to say that technology is anything that has been developed since you've been born. Because basically, things that you grew up with, you don't think of as being new technology; they're just part of everyday life. I mean, the pen that you're writing with right now, Bill, is a writing technology. But nobody says, "Oh! I just bought some brand-new technology. Do you want to see it? It's my pen." Pens and paper and books and blackboards are a perfectly normal part of teaching now. We don't talk about BALL: blackboard assisted language learning.

This is my prediction. It might not be in ten years, it might not be in twenty years, but at some point in the future, computers and the Internet will become so regularized that we won't have special courses on CALL. We won't have special books on CALL. Computerized media will be the pens and paper of tomorrow. We will have new challenges, but they will be challenges that we'll face in all aspects of teaching and not in a special place that we compartmentalize and call CALL.

WPA: *It's been a pleasure to meet you and do this interview, Mark. On behalf of the readers of* English Teaching Forum, *thank you very much!* 🦎

Notes:

1. You can reach Mark by email at <markw@uci.edu> or via his Web site at <http://www.gse.uci.edu/markw>.
2. An emoticon is a symbol created with keyboard letters and other characters to express emotion or convey facial expressions in an email message. Here are some common examples of emoticons and their meanings: :-) [happy, smiling] :-([sad, frowning] ;-) [a smile with a wink] :'-([crying] :-D [laughing]

not they would "work" with your students. In addition, it includes making conscious decisions as to the most effective way to reinforce the positive and respond to the negative elements of classroom interaction.

Using robust reasoning to answer the question, "Did my students benefit from what happened in class today?" will lead us to definitions of effective teaching that are context-appropriate and applicable to our classrooms. This in turn will enable us to develop teaching methods and activities that "work." It will also make it easier for us to explain to others why we do what we do in our classrooms and why we believe that what we do "works." In an age when there are very few instant solutions to the teaching issues that confront us when we enter a classroom, robust reasoning is an effective way to generate our own solutions to classroom realities.

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