

## Changing Teaching with Technology

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Education and technology have long been partners. In education, as in all other areas, the diffusion of change works the same way:

- a few early adopters are willing to try anything and report their results;
- the bulk of educators are willing to consider the change, but take a wait and see attitude; and
- a few holdouts refuse to make any changes, no matter what.

As time passes, the innovation either sticks, usually in a modified form, or is replaced. For example, the overhead projector is well-accepted across classrooms, while its electronic counterpart, the computer projector, is still in the assessment and acceptance stage. Most language teachers have embraced video use in the classroom, but classroom television never really caught on and has been largely abandoned in language teaching. Computer technology, including the Internet, is the innovation currently being assessed, modified, and gradually accepted in some form or another.

The various educational innovations have promoted change in teaching methods. Consider what the VCR has done in the language classroom. Teachers no longer need to play a movie straight through (old film projectors were not very amenable to stopping, backing up, and starting again). Instead, teachers can select clips, stop and start, and even record and edit. This makes it possible to fine-tune the language given to students and to create the comprehensible input that Krashen (1982) calls for. Classrooms with cameras open even more doors, allowing students to create their own videos and moving the locus of instruction from the teacher to the students themselves.

Computer technology, especially the Internet, is one of the current forces driving changes in language teaching. As resources for teachers, computers enable:

- creating and easily modifying text-based classroom materials: handouts, overheads, tests, posters, etc. with graphics as well as text
- finding current information on any topic
- providing structured self-study, including automated record-keeping
- keeping in touch with other teachers and learning what they are doing

But computer technology does more than enhance what teachers can use as resources. Like putting video cameras in the hands of students, letting students use computers changes the way that instruction works. The students can and do take on more control of their own learning. As a result, traditional roles of teachers and learners are shifting in this new, language data-enriched, landscape.

### Traditional Language Teaching

Traditional language teaching is based on an “empty vessel” pedagogy, also referred to by Freire (1970) as a “banking” model, and generally has strong elements of the behaviorism described by Skinner (1974). The teacher has information that students lack, and the role of the teacher is to provide that information, much like pouring water into an empty vessel or depositing money in a bank. Historically, teachers of foreign languages in particular have provided otherwise unavailable language data for students. The teacher often is expected to collect or bring back realia from trips to countries where the target language is spoken. The magazines and newspapers may be out of date, but they may be the only ones students have. Genuine restaurant menus, videos, records and tapes – these may all be donated by the teacher to the class. Teachers and students especially prize any other items of popular culture that might contrast with local culture.

Where the teacher is the source of language data, classrooms are necessarily teacher-centered. The teacher plays the role of “sage on the stage,” generously imparting information to the learners. Students receive information, store it, and repeat it. The teacher in these classes may dole out cultural tidbits to enliven a grammar- or literature-based curriculum. Students sing along with the music the teacher has brought back.

Videos may be screened in their entirety; bored, sleepy students delight in the opportunity to relax in the darkened classroom. In the teacher-centered class, good language learners succeed and even develop some interest. Other students sit through it and suffer mostly in silence. Typical of this style is traditional high school foreign language instruction in the United States. Although many Americans have studied Spanish or French in high school, very few can speak more than a few phrases as a result of their language study. They have little or no connection to the language or cultures represented by the language. Their “empty vessels” refused to hold what was poured into them.

### Current Language Teaching

Current language teaching, on the other hand, has a communicative language focus. Students, rather than being empty vessels, are active participants in the process of learning. They are also individuals with differing learning styles that the teacher should be aware of and respond to. The basic function of the teacher is that of a guide on the side, not the sage on the stage. The constructivist movement, built in part on theories from Vygotsky (1973), Dewey (1907), and Piaget (1986) and on schema theory (Kintsch, 1977; Schank & Cleary, 1995), is highly influential in current language teaching. Learners use their background knowledge and new information to construct knowledge in their own way and their own time. Bruner (1966), Brooks & Brooks (1993), and Schank & Cleary (1995) offer further explanations of constructivism and why it is an improvement over previous methods.

Time is a key part of the language learning equation. People often argue that language learning is natural and does not need to be structured because we have all become proficient in our first language. It is true that first language learning is natural and unstructured, but slow. In English, it takes about six years for the first language learner to be able to communicate simple concepts. It takes 12 years to be somewhat sophisticated in language knowledge, and 18 or more years to be ready for university-level work. Most adults are not willing to take six to 18 years to learn a second language in the sink-or-swim first language manner.

Given time constraints on second language learning, there is a clear need for the teacher as part of the process. In this new model, the teacher’s role is to set the stage and guide learners through the language learning process. Learners still need comprehensible input and do not necessarily know where or how to get it. They need to develop a sense of how the language is organized syntactically and semantically. Students who have successfully learned multiple languages can do better on their own than those learning their initial second language – students who are already multilingual know about language in general and about their own learning in particular. For most language learners, however, the teacher’s guidance is critical.

### Role of Computers

Enter computers and the Internet into the language teaching and learning equation. Student access to technology, especially the Internet, is pushing the traditional teacher-centered classroom to change more and faster. Many argue that computers are basically an attractive nuisance, filled with flash but little or no substance. Of the millions of Internet sites, most are junk. Students may be attracted to the animated graphics, but they learn little from “pretty” sites.

While there is a great deal online that is useless, the Internet also provides a vast source of authentic English language data on any and all topics. Growth in websites has been rapid, as shown in Table 1.

The use of the Internet has also grown dramatically over the years. According to the Nielson/Net Ratings, 144 million Americans are online and average 19 sessions per

Table 1. Number of domain names registered from July 1993 - July 2000.

|           | Registered names |
|-----------|------------------|
| July 2000 | 93,047,785       |
| July 1999 | 56,218,000       |
| July 1998 | 36,739,000       |
| July 1997 | 19,540,000       |
| July 1996 | 12,881,000       |
| July 1995 | 6,642,000        |
| July 1994 | 3,212,000        |
| July 1993 | 1,776,000        |

Source: <http://www.isc.org/ds/WWW-200007/index.html>, accessed Nov 12, 2000.

month (Nielsen/Net Ratings, 2000). In Thailand, for example, Global Reach (2000) says there are over one million Thais online. This is probably an underestimate. Table 2 shows the growth of Internet users by language group over the past four years and projections for the next five years.

|                    | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | pop % | Total |
|--------------------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| Spanish            | 0.2  | 0.8  | 1.8  | 13   | 23   | 29   | 36   | 46   | 58   | 70   | 21%   | 332   |
| Japanese           | 2.0  | 7.0  | 9.0  | 20   | 29   | 40   | 46   | 58   | 64   | 77   | 62%   | 125   |
| German             | 0.5  | 3.5  | 6.3  | 14   | 23   | 30   | 39   | 45   | 57   | 65   | 66%   | 98    |
| French             | 0.2  | 2.0  | 3.4  | 9.9  | 17   | 22   | 26   | 32   | 37   | 42   | 58%   | 72    |
| Chinese            | 0.1  | 1.2  | 2.0  | 10   | 31   | 40   | 65   | 90   | 130  | 170  | 19%   | 885   |
| Scandinavian       | 2.0  | 2.2  | 3.2  | 7.7  | 9    | 9    | 10   | 11   | 12   | 14   | 73%   | 19.3  |
| Italian            | 0.1  | 0.5  | 1.8  | 9.7  | 13   | 15   | 19   | 23   | 28   | 33   | 58%   | 57    |
| Dutch              | 0.1  | 1.0  | 2.0  | 5.8  | 6    | 8    | 8    | 9    | 11   | 13   | 65%   | 20    |
| Korean             | 0.0  | 0.1  | 0.8  | 5    | 17   | 22   | 27   | 35   | 43   | 50   | 67%   | 75    |
| Portuguese         | 0.0  | 0.2  | 1.2  | 4    | 10   | 12   | 15   | 20   | 29   | 40   | 24%   | 170   |
| Other Non-English: |      |      | 13.8 | 9.9  | 32   | 35   | 37   | 44   | 49   | 55   |       |       |
| English            | 40.0 | 45.0 | 72.0 | 148  | 198  | 210  | 216  | 225  | 240  | 250  | 71%   | 350   |
| Total Non-English: | 10.0 | 16.0 | 45.3 | 109  | 210  | 263  | 332  | 415  | 520  | 630  | 11%   | 5730  |

Source: Global Reach, <http://www.greach.com/globstats/evol.html>. Accessed November 15, 2000.

### ELT Websites

Like other websites, the number of websites for English language teaching (ELT) has also increased over time. The first page designed for ELT, currently at <http://www.rong-chang.com>, was posted in 1994 by Rongchang Li as part of her graduate work. It consisted at first of a list of links to other websites useful to teachers, with nothing designed primarily for ELT. Karla Frizler's "Frizzy's FUN Site," currently at <http://thecity.sfsu.edu/~funweb/>, followed shortly thereafter. It, too, was part of graduate work and consisted largely of links. The FUN site included links for students as well as for teachers, but still few were designed for ELT. These and other links-oriented sites helped teachers by pulling information together and making it easily accessible, but there wasn't much guidance in the initial versions of these pages. (Now, these pages look quite different.)

With Dave Sperling's "Dave's ESL Cafe" in 1995, now at <http://www.eslcafe.com>, came interactive activities designed for English language learners. This site was a breakthrough in its use of programming tools like CGI scripts to allow learners to do more than just click and look. The Graffiti Wall allowed students to post messages to the ESL Cafe, though all were pre-screened before posting. The Quizzes section had multiple-choice quizzes that were scored immediately. Teachers were encouraged to submit additional quizzes on any topic. Students reacted enthusiastically to the interactive opportunities.

More teacher- and student-oriented sites began to appear shortly afterward. ITESL-J, the Internet TESL Journal, came online from Japan with articles and links for English language teachers. The site, currently at <http://www.aitech.ac.jp/~iteslj>, then added a student section with more quizzes, many of them Java-based, and interactive crossword puzzles. Teachers were encouraged to add more to this site, as well. One of the first sites for extended listening practice was Randall's Listening Lab, currently at <http://www.esl-lab.com>. It was shaky at first, with files that would not always download and would not play reliably or well. The site improved technically when it added a better audio player. It improved pedagogically when pre- and post-computer activities were added – one of the first sites to do so explicitly. Another development has been with sites where students can post questions and teachers will answer, including Dave's ESL Cafe. These sites assume a group of willing volunteers who are excited enough about working online that they are willing to forego compensation for their work.

As the Internet became more commercial, so did ELT sites. A number of commercial sites popped up, including the Comenius site, currently at <http://www.comenius.com>. Comenius was subtle in its commercialism, having frequently-updated information about fables and idioms as its opening and a tab to click to move to the software sales area. Later commercial sites have been far less subtle. They tend to have something free to bring viewers in, such as the free courses and help at Englishtown (<http://www.englishtown.com>), but plenty to sell. Display ads have become common on almost all ELT websites, both those with an overriding commercial purpose and those who use the ads to fund their more academic orientation.

ELT textbook publishers have also gotten into the act. Like software publishers, they began with online ordering and went on to providing value-added web pages to accompany the textbooks. While the additional web pages were minimal at first, they have since become more useful. Many of the sites provide on-computer activities related to the texts, additional suggestions for teachers, and even additional reproducible material. Houghton-Mifflin's Education Place at <http://www.eduplace.com> is an example of how far publishers have come. The additional reading activities on their site are extensive and not just related to the specific texts that they publish, making it a useful site for teachers and students in general.

### **Language data online**

Aside from sites specifically designed for language teaching, the web provides a rich assortment of language data. Teachers no longer have to settle for back issues of newspapers. The *New York Times* (<http://www.nytimes.com>), *Los Angeles Times* (<http://www.latimes.com>), and many other newspapers around the world publish a daily edition online. Many offer the option of getting headlines as email every day. Magazines are also online, from those with paper versions such as *Time* (<http://www.time.com>) to those published only online, such as *Salon* (<http://www.salonmagazine.com>). The online versions are updated frequently, usually on a daily basis. Text and graphics are not the only media online; audio files of current news and information are available at CNN (<http://www.cnn.com>), National Public Radio (<http://www.npr.org>), and other television and radio websites. Popular music and lyrics are easy to find online, though many come with copyright problems. Video clips of movie previews as well as music videos offer further opportunities for language and culture work.

Interactivity comes in a variety of modes online, and the ability to use the Internet to connect with other people is one of its strongest features. Email predated the web and is still much more readily available to both students and teachers than the web. After all, email that is not web-based requires only the most minimal of equipment, running on the original IBM PCs (or even Apple IIe's) with a regular telephone line. Teachers and students can interact via email without time and space constraints. IECC, Intercultural Email Classroom Connections, <http://www.stolaf.edu/network/iecc>, makes it easier for teachers to find email partners for their classes. Kenji Kitao's email website at <http://ilc2.doshisha.ac.jp/users/kkitao/online/www/keypal.htm> offers background information and links for getting started with email penpals, also known as keypals. Mailing lists can be class-based and connect students with each other and with the teacher. They can be interest-based and connect students in one class with those in other classes, as in the Student Lists listserv, SL-LISTS (information is at <http://www.kyoto-su.ac.jp/~trobb/slinfo.html>). Students can also join professional mailing lists and be connected with content experts in a wide variety of fields. For those with web access, finding mailing lists is easy at Liszt, <http://www.liszt.com>, or at the Directory of Scholarly and Professional E-Conferences, <http://n2h2.com/KOVACS>.

Chat is another way of connecting students with others online. IRC, Internet Relay Chat, is one of the most commonly used Chat systems (some helpful introductory information about IRC is at <http://www.irchelp.org/irchelp/new2irc.html>). Whether users choose IRC or another form of Chat, the first step is to choose a "channel" and join a group in conversation. Users read, type, and hit Enter or Return as fast as possible. Because Chat is synchronous, or "real time," the communication is rapid and often abbreviated. One comment follows another, but they may or may not be in sequence – the postings are in the order that the users hit Enter, and so are more in order of typing speed than of content. In general, there is no way to see what was

said before one joined a discussion, and no way to hold onto what happens after one leaves. There are ways that teachers can take a bit more control of the process, as explained in Healey (1997). Overall, however, Chat is more for building fluency and for fun than for working on language accuracy.

Online discussion forums allow interaction among users at a much more measured pace than Chat. These can be freely accessible, such as the student discussion forums at Dave's ESL Cafe (<http://www.eslcafe.com>), or private, such as the "classrooms" set up at Nicenet (<http://www.nicenet.org>). These discussions are "threaded," which means that topics and replies remain together. Users can choose which comments to reply to, unlike Chat. Online discussion forums are asynchronous, which means that comments and replies can be posted and read whenever the user desires. This type of interaction allows students to have the fluency and fun on interacting over the Internet while giving them a chance to reflect on what they are posting for others to read.

### **Time to give up?**

All in all, the Internet offers more language resources than any classroom or school could possibly have. With newspapers, magazines, video, audio, exercises, and discussion available online, the question arises whether students need teachers any more. Clearly, teachers are no longer the only source of language data. With other language experts only a click and a question away, it is unwise for teachers to appear infallible in their knowledge. If all teachers did was to pour information into the heads of students, computer tools might well replace teachers. In a constructivist teaching model, however, there is still plenty for teachers to do. Christopher Dede (1988) points out a hierarchy when he talks about hypertext that applies well to any medium:

How do data, information, knowledge, and wisdom differ? ... Data will be defined as input gathered through the senses; and information as integrated data which denotes a significant change in the environment. (Anthropologist Gary Bateson [1975] defined "information" as "any difference that makes a difference.") Information is converted to knowledge by interconnecting it with known concepts and skills as part of achieving a goal. (Note that knowledge has an attribute of purpose, which implies the existence of an intelligent agent, human or computational, in transforming information into knowledge.) Wisdom is knowledge about knowledge ("meta-knowledge"). (p.95)

Dede also points out that "high levels of data overwhelm students; they become unable to decide which information is important, to interconnect new information into existing knowledge, or to recognize overall patterns of meta-knowledge" (1988:95). Yes, learners have access to data and some information, but they will not necessarily be very good about putting it into a context, creating tasks that will help them learn, and understanding the overall relationship of what they are learning at any given time to the whole body of English language knowledge.

The abundant data and information on the Internet are not knowledge and certainly not wisdom. Teachers have a strong role to play, but it is different from that in the traditional language classroom. The teacher is not a single-handed builder (and water pourer) but more like a general contractor. The teacher helps students meet their needs by bringing resources and know-how about how to build language knowledge, like a contractor brings together a plumber, electrician, carpenter, and knowledge of how to build a house. Teachers help their students construct knowledge by finding or creating comprehensible input and sequencing learning to fit student ability. In technology terms, this means finding good websites and software and creating tasks for students, linking what learners do on the computer to their classroom work and the wider context of language learning. This also means that using computer technology is not an instant fix for teachers or for learners. It takes time to seek out appropriate computer resources and fit them to appropriate tasks. It is not enough just to tell learners to go to a website. In the same way that teachers do not tell students just to go to the library and look for "something interesting," teachers cannot just tell students to surf the web for "something interesting." It takes work.

### **What should teachers do?**

Many teachers despair because technology is constantly changing, with more software and Internet resources available all the time. There are not enough hours in the day to do regular classroom work plus keep up with all the changes and possible resources. Fortunately, it is not necessary to know about everything. Teachers need to know about some resources, not all, whether in a library or on the Internet. In the same way that teachers do not know all the possible textbooks for language teaching, just ones that work for them, teachers do not need to know all possible websites, just ones that work for their students. Mailing lists such as TESLCA-L,<sup>1</sup> for computer-assisted language learning in general, and NETEACH,<sup>2</sup> for Internet teaching specifically, help teachers keep up with developments and share what works with their colleagues around the world. These lists are non-commercial and quite collegial.

Teaching with technology is making changes in pedagogy, but the shift from teacher-centered to student-centered learning was going on before computers and the Internet became part of the language teaching landscape. Good teaching practices in a student-centered classroom are much the same with and without technology. Integrating activities, whether on or off the computer, with overall curricular goals is essential to effective teaching. Teachers used authentic language data where possible and appropriate before the Internet came on the scene, but it has become considerably easier with Internet resources. One of the best approaches in student-centered teaching is to delight in learning **with** students, encouraging them to bring in resources to share. From a constructivist perspective, creating websites is an easy and effective way to get students to work on negotiating meaning for themselves, since they are writing for an audience much broader and more diverse than the teacher and their classmates. Students are happy to help figure out technical problems, too, and are often faster about it than their usually older and slower teachers. Some technical skill helps, but being a tech wizard need not be part of a teacher's job description.

Our major role as teachers now is to help students put new information into perspective and into place. We do not need to create language data; the amount of language data on the Internet will continue to increase exponentially with no effort on the part of teachers. What we do need to do is to encourage our learners to grow academically and intellectually as well as linguistically. Students should aim to be self-aware, critical thinkers able to gather and analyze information. Given the global onslaught of advertising in an increasingly commercialized world, critical thinking is more important now than ever. Our job is to help students move from working with data to information to knowledge and, ultimately, to the wisdom they need to deal with the demands of the global village. In a world as interconnected as ours, wisdom is the only way to peace.

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## Notes

1. Subscribe to TESLCA-L by composing a message to [listserv@cunyvm.cuny.edu](mailto:listserv@cunyvm.cuny.edu), and in the body of the message say

SUB TESL-L firstname lastname <= put your first name and last name here

SET TESL-L NOMAIL

SUB TESLCA-L firstname lastname <= put your first name and last name here again

SET TESLCA-L DIGEST

Then send the message. Capital letters don't matter. The first line subscribes you to the main list about English language teaching, TESL-L. You must be a member of this list in order to join the sublists like TESLCA-L. The second line sets it so that you don't receive any mail from the main list. The third line subscribes you to TESLCA-L itself, and the fourth line sets it so that you receive one message per day that includes all of the separate messages to the list that day.

2. Subscribe to NETEACH-L by composing a message to [listproc@ukans.edu](mailto:listproc@ukans.edu), and in the body of the message say

SUB NETEACH-L firstname lastname <= put your first name and last name here

Send the message. Capital letters don't matter.

## References

Brooks, J. G., & Brooks, M. G. (1993). *The case for constructivist classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

Bruner, J. S. (1966). *Toward a theory of instruction*. Cambridge: Harvard University Press.

Dede, C. (1988). The role of hypertext in transforming information into knowledge. In W.C. Ryan (Ed.), *National Educational Computing Conference proceedings '88*, pp. 95-101. Eugene, OR: International Council on Computers for Education.

Dewey, J. (1907). *The school and society*. Chicago: University of Chicago Press. Accessed online at <http://paradigm.soci.brocku.ca/~lward/Dewey/DEWEY11A.HTML>.

Freire, Paulo (1970). *Pedagogy of the oppressed*. New York: Continuum.

Global Reach (2000). Global Internet statistics: Sources and references. <http://www.gltreach.com/globstats/refs.php3>. Accessed November 15, 2000.

Healey, D. (1997). April, 1997: Chat information. <http://osu.orst.edu/dept/eli/april1997.html>. Accessed November 30, 2000.

Kintsch, W. (1977). *Memory and cognition*. New York: Wiley.

Krashen, S. D. (1982). *Principles and practice in second language acquisition*. New York: Pergamon.

Nielsen/Net Ratings (2000). <http://209.249.142.16/nnpm/owa/NRpublicreports.usagemonthly>. Accessed November 12, 2000.

Piaget, J. (1973). *To understand is to invent*. New York: Grossman (French: *Où va l'éducation?*, 1948).

Schank, R.C. & Cleary, C. (1995). *Engines for education*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Skinner, B.F. (1974). *About behaviorism*. New York: Knopf.

Vygotsky, L. (1986). *Thought and language*. A. Kozulin (Trans. and Ed.). Cambridge, MA: MIT Press. Original work published 1934.