



From left to right: Zachary Schneirov, Matthew Taylor, and Janine Spencer

# DiLL: Language Lab of the Future

Students who learned languages in the second half of the 20th century probably remember language labs: the tight little carrels, perfect for afternoon naps; the tape-eating analog tape recorders that played improbable and often incomprehensible conversations; the earmuff-style headsets that would screech with the slightest adjustment. Janine Spencer, French and Italian, refers to them as “jails.”

Now, language students have access to the Digital Language Learning Lab (DiLL), thanks to the efforts of faculty and staff at Northwestern. DiLL is a unique Macintosh-based audio system that can enhance the way language is taught. Installed and developed at the Multimedia Learning Center (MMLC) in Kresge Centennial Hall, DiLL is also being licensed to run in other venues. DiLL is the brainchild of Janine Spencer, academic program director of the MMLC, in consultation with Li-Cheng (Richard) Gu, African and Asian languages. Their ideas were translated into software and are being continuously updated by the MMLC’s Matthew Taylor, systems architect and Zachary Schneirov, software developer.



John Paluch, distinguished senior lecturer in the Department of German, leads students of German 101-1 in a paired-partner activity using DiLL. Five sections of the course make use of DiLL on a biweekly basis. The German program set the improvement of pronunciation as a goal and now uses DiLL to sharpen aural comprehension, polish pronunciation and provide students with additional structured conversation practice.

## Digital Solution

DiLL software provides a central digital control panel from which a language instructor can listen to and correct students as they speak. Using the DiLL software, an instructor can see and hear what each student is working on and communicate with the entire class or with individual students. Every recording a student makes while working or testing is automatically saved to the server where the instructor can access them remotely at any time to review and evaluate the student's work.

The genesis of DiLL came about when Spencer was tapped to be acting director of WCAS's language lab in 1994. She was faced with outdated equipment and a tight budget. The few proprietary systems available were

extravagantly expensive and required replacement of all the existing equipment. She decided to explore the possibility of a computer-based solution to replace the old language lab.

Then, in 2003, a summer internship funded by the Hewlett Fund for Curriculum Innovation brought undergraduate computer science major Schneirov into the picture. Schneirov was already experienced in developing software on the Mac platform, having developed Notational Velocity, a note-taking application, and development of DiLL took off. Spencer had identified a number of necessary features the revamped lab would need to have. She wanted open space, not claustrophobic carrels; she wanted students to have the ability to communicate easily with one another and with the instructor; and she wanted a digital system to replace

the outmoded analog technology of tape recorders. As the software was being developed, Schneirov recommended that the lab make use of unobtrusive laptops to further break down the barriers Spencer sought to eliminate.

Audio quality was essential to Gu because of the importance of tones to the Chinese language. The developers applied digital sound processing, which takes sound as a wave form and enables the transformation of the signal. Students using DiLL can slow down the audio without losing its sound quality.

### Protecting and Licensing Their Intellectual Property

Recognizing the potential applications of their system, Spencer and her team knew it was important to bring their invention to the Technology Transfer Program (the predecessor of the new Innovation and New Ventures Office) at an early stage. Working first with Indrani Mukharji (now executive director of international research partnerships in the Provost's office), and then with Gary Behler (now INVO licensing associate), they realized that licensing was the appropriate road to take to both protect and market the product. "TTP was indispensable to our work," says Taylor. "We couldn't have done it without them."

The DiLL team's relationship with their local Apple representative led to their first licensing opportunity. A school district in northern Illinois that used Mac computers was looking for a language learning system, and the match was made. Illinois Township High School District 214 became a beta tester site as well as their first licensee in 2005. The license

began with two schools and now is installed in all seven schools in the district. Other licensees include the University of Chicago Laboratory Schools, the University of Minnesota, and Columbia University in New York. The first international license was issued in 2006 to the coincidentally named North-West University, in Potchefstroom, South Africa, in a predominantly Afrikaans-speaking region. Approximately 26 licenses have been issued so far.

Licensing of DiLL is somewhat constrained by limited resources. Taylor and Schneirov, who work on installation of the licensed systems, have other responsibilities at the MMLC. Despite the time pressures, what they learn installing the system proves invaluable in further developing the application. Taylor cites creative curricula that he has discovered in language classrooms — such as setting up the room as a United Nations assembly or playing the "telephone" game — as innovative uses of the system's flexible configuration. Taylor and Schneirov hope that in the future their installation experiences can help develop the product even further, using the MMLC — where DiLL is installed on 55 computers in three computer labs — as a proving ground.

"Instructors are able to create their own curriculum and have students play games and have fun while they learn," says Spencer. "We can see that the students have more fun and that they're more engaged and more comfortable. We no longer have to wake them up as we used to have to do in the old language labs." —by Joan Naper

