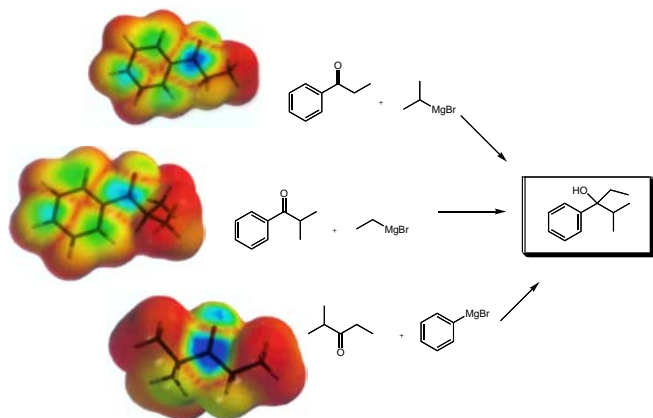


Conference Call

Which is the most effective synthetic route?



Ingrid Montes gave examples of how to use an inquiry-based approach while teaching organic chemistry.

constituents and of pesticides and heavy metals. He showed ways to conduct interactive discussions using environmental issues to improve the learning process.

Each plenary lecture was followed by a discussion session, which was divided into four groups: organic, inorganic, physical, and miscellaneous (mostly environmental chemists and biochemists). Utilizing the material presented in the lectures, the groups focused on finding solutions to problems. Plenary lecturers in each group provided assistance with the discussions. At the concluding session, the following general conclusions were agreed upon: define a common core curriculum for the B.Sc. degree course, have a greater focus on teaching the essentials, reduce over teaching, include more technology in teaching, and include teaching of mathematics.

The conference created a high level of satisfaction among participants, especially those who came from remote universities. In response to a questionnaire, 94 percent of participants wanted to have follow-up meetings. It was a rewarding experience to the organizers too. The common bond formed within discussion groups has generated sufficient energy to initiate e-mail communication about curriculum development. The physical chemistry group is in the lead, while other groups are getting ready to do the same.

Neelakanthi E. Gunawardena <neela@kln.ac.lk> served as the conference organizer. She is a professor at the University of Kelaniya.

New Science Education Assessment: The Challenge

by Laure Joumel

The Chemical Heritage Foundation (Philadelphia, Pennsylvania, USA), which treasures the past, was focused on education for a better future during the **6th Annual Leadership Initiative in Science Education (LISE6)**, held 26–27 April 2006. The theme of the conference was “What Our Students Know: Assessment and Accountability in Science Education.”

The American educational challenge for the 21st century is to improve the teaching of science in grades K-12. The federal No Child Left Behind Act (NCLBA) of 2001 requires teachers to use research-based teaching methods and to measure student's progress regularly. That gives huge importance to assessment. Assessments are the only way for teachers to check their success. Assessment sets the rhythm of a child's life at school. Assessment is the key to teaching. So how can it best be accomplished? Teachers and administrators comprised the audience for the eight speakers at the conference, all well known personalities in their fields, who covered different angles of the topic.

Teachers in students' shoes

The conference opened with an active workshop session conducted by George DeBoer, who is deputy director for Project 2061 of the American Association for the Advancement of Science and a professor of educational studies at Colgate University. DeBoer led attendees through a two-hour practical exercise that introduced them to Project 2061. Launched in 1985, this plan helps reform K-12 education by building an online collection of assessments aligned to standards.

During the second part of DeBoer's workshop, the teachers go back to school. He used the following example to illustrate the misconceptions that children often have: What is the smallest? A: an atom, B: a bacterium (micro-organism), C: a cell in your body, or D:

Project 2061 began its work in 1985—the year Halley's Comet was last visible from earth. Children starting school now will see the return of the Comet in 2061—a reminder that today's education will shape the quality of their lives as they come of age in the 21st century amid profound scientific and technological change. <www.project2061.org>.

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the width of a hair? “We assume that they know something they don’t,” he said. The workshop provided a good opportunity for teachers to have an animated discussion.

Elisabeth Stage, director of the Lawrence Hall of Science at the University of California, Berkeley, presented a talk titled “Who Wants to Know and Why?” She pointed out the importance of the context and the motivation surrounding learning and assessment.

Discuss, Argue, and Tip

The second day focused exclusively on assessment in the science classroom. The director of the Learning and Teaching Research Center at the Educational Testing Service, Dylan William, explained how to use assessment to improve learning. “Pose, Pause, Bounce” is his motto! His best teaching tips are to make the students participate and to compensate them for good work in the classroom. “You are here to make them smarter,” he insists, and repeats, “motivation is really a necessity.” “I think we need to change the way teachers teach and not what they teach,” he said.

After learning how to perform better in the classroom, it was time to learn about tools that can make it more effective. And that’s Libby Cohen’s specialty: using technology to support Universal Design Assessment. She is the principle investigator for the Eastern Alliance in Science, Technology, Engineering, and Mathematics. She calls this generation of students the “Neomillionals” or “media multi-mavens.” “They need visual images” she pointed out, such as the one you can find on <http://vcell.ndsu.nodak.edu>, the virtual cell educational animation website. Although Libby Cohen cited some tools like video, CD ROM, and the



Internet, she insisted on the advantages of digital text: “that is malleable, transformable, and transferable” and encouraged teachers to use it.

For another angle, Amelia Maurizio, executive director of Global Educational Alliances for SAP America, described how the Partnership for 21st



Teachers in students’ shoes . . .

Century Skills works to create a better high school learning environment. She pointed out that according to a 2004 report by the American Diploma Project, “40 percent of high school graduates feel inadequately prepared for college or the workplace.” “What you measure really matters,” said Maurizio. Kathleen Comfort, principle investigator and director of the Partnership for the Assessment of Standards-Based Science at WestEd, put the teachers in children’s shoes again with an effective exercise. Comfort showed how increasing teacher understanding and use of data, coupled with instructional interventions, contribute to improved student learning and achievement in science.

Meryl Bertenthal, visiting director of research programs for the Center for Learning, Instruction, and Teacher Development at the University of Illinois at Chicago, spoke about the NCLBA and spurred discussion by asking “Should science be included in the Adequate Yearly Progress calculation?” The conference ended with a question and answer session in which the idea of a national test was debated. “Will a student from Kansas and another one from New York really need different science skills in their life?” wondered Donna Cleland, assistant director for science in Wallingford, Pennsylvania. Bertenthal had the last word, and claimed that “It’s impossible to have a national test.”

Laure Joumel <laurejoumel@gmail.com> is a freelance writer and native of France. She currently studies in the United States and will spend part of her summer at the Chemical Heritage Foundation reviewing the Ray G. Neville collection in the Othmer Library. Photos credit (including issue cover): Douglas Locker, CHF.



www.chemheritage.org/events/lise6



*Keynote speaker
Elisabeth Stage.*