

*“The Center for Authentic Science Practice in Education: an Undergraduate Research Collaborative in Chemistry,”* Dr. Don Wink

### **Abstract**

Research experiences can often be inspiring and life-changing for young college students. It is possible that research experiences are pivotal in making decisions about college majors and careers. As part of the Center for Authentic Science Practice in Education (CASPiE) project, we have implemented research as part of the regular curriculum for first and second year students in chemistry. The center utilizes authentic research projects, a remote-access network of chemical instruments, the peer-led team learning (PLTL) model, and students’ mainstream laboratory courses for giving students a research experience. Structure and results of the program to date will be described.

Themes to be presented:

- How are the teaching materials (“research modules”) developed? What is the nature of the research involved?
- What is the impact on students? Results of evaluation.
- How are the learning outcomes from the CASPiE model of instruction different from those of inquiry-based instruction?
- Peer-led Team Learning as Part of CASPiE.
- Looking toward the future: Making the CASPiE model sustainable.

### **Biographical note**

Donald J. Wink is Professor and Director of Undergraduate Studies in the Department of Chemistry at the University of Illinois at Chicago. He is also a member of the UIC Learning Sciences Research Institute and Director of Graduate Studies for its Ph.D. program. He was trained in chemistry at the University of Chicago (S.B.) and at Harvard University (Ph.D.) He then worked at New York University on synthetic, theoretical, and applied organometallic chemistry. In 1992 he moved to UIC as associate professor and coordinator of general chemistry. His first UIC project joined preparatory chemistry and intermediate algebra curricula in a curriculum development and research project that demonstrated gains for student outcomes in later chemistry classes and the publication of a new “math-aware” preparatory chemistry text, *The Practice of Chemistry*. A later project involved faculty from other departments that require general chemistry in the development of scenario-based laboratory instruction, resulting in the lab text *Working with Chemistry*. Subsequently he joined with others at UIC and area community colleges to design a new set of content courses for pre-elementary education majors, including work to implement feminist pedagogies and inquiry learning. He continues his work with undergraduates through the *Center for Authentic Science Practice in Education*, an NSF-funded Undergraduate Research Collaborative that includes UIC, Purdue, Ball State, and NEIU. His most recent work also includes work on teaching in K–12 settings, including a collaborative effort for teacher preparation that brought together UIC and area community colleges and an NSF GK–12 project for intervention in schools. One important outgrowth of this is his work as a co-PI and chemistry course coordinator for the *Inquiry to Build Content* program for the Chicago Public Schools’ High School Transformation