



YALE NATIONAL INITIATIVE

to strengthen teaching in public schools®

Curriculum Units by Fellows of the National Initiative
2013 Volume V: Energy Sciences

Preface

In April 2013 the Yale National Initiative to strengthen teaching in public schools® accepted sixty-five public school teachers from sixteen school districts in nine states to participate in six national seminars held at Yale. The Initiative is a long-term endeavor to influence public policy on teacher professional development, in part by establishing exemplary Teachers Institutes for high-need schools in states around the country.

Following the approach developed in New Haven and implemented in other cities, Teachers Institutes are educational partnerships between universities and school districts designed to strengthen teaching and learning in a community's public schools. Evaluations have shown that the Institute approach exemplifies the characteristics of high-quality teacher professional development, enhances teacher quality in the ways known to improve student achievement, and encourages participants to remain in teaching in their schools.

Forty of the Yale National Fellows came from school districts that are planning or exploring the establishment of a new Teachers Institute for Chicago, IL; Diné Nation, AZ; Emeryville, CA; Richmond, VA; San José, CA; San Mateo County, CA, and Tulsa, OK. Other National Fellows came from Teachers Institutes that are members of the League of Teachers Institutes® located in Charlotte, NC; New Castle County, DE; New Haven, CT; Philadelphia, PA; and Pittsburgh, PA. Overall, more than half of the Yale National Fellows were participating for the first time.

The National Fellows attended an Organizational Session of the seminars held in New Haven on May 3-4. The seminars reconvened during a ten-day Intensive Session from July 8-19 and concluded in mid-August when the Fellows submitted their completed curriculum units. The six seminars were:

- "Energy Sciences," led by Gary W. Brudvig, Professor of Chemistry and of Molecular Biophysics and Biochemistry;
- "Picture Writing," led by Janice Carlisle, Professor of English;
- "Interpreting Texts, Making Meaning: Starting Small," led by Paul H. Fry, Professor of English;
- "The Art of Biography," led by John L. Gaddis, Professor of History and of Political Science;
- "Invisible Cities: The Arts and Renewable Community," led by Joseph R. Roach, Sterling Professor of Theater and Professor of English, of African American Studies, and of American Studies; and
- "Genetic Engineering and Human Health," led by W. Mark Saltzman, Professor of Chemical and Biomedical Engineering.

The dual purposes of the program are to provide public school teachers deeper knowledge of the subjects they teach and first-hand experience with the Teachers Institute approach. This increases their leadership in an existing Teachers Institute or prepares them to lead the development of a new Teachers Institute. Each participating teacher writes a curriculum unit to teach his or her students about the seminar subject and to share with other teachers in their school district and, over the Internet, with teachers anywhere. The curriculum units contain five elements: content objectives, teaching strategies, examples of classroom activities, lists of resources for teachers and students, and an appendix on the district academic standards the unit implements.

The curriculum units National Fellows wrote are their own; they are presented in six volumes, one for each seminar.

The Yale-New Haven Teachers Institute® is a permanently endowed unit of Yale University, which undertook the National Initiative in 2004.

James R. Vivian

New Haven

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