



# YALE NATIONAL INITIATIVE

*to strengthen teaching in public schools®*

Curriculum Units by Fellows of the National Initiative  
2016 Volume IV: Energy Sciences

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## Preface

In March 2016 the Yale National Initiative to strengthen teaching in public schools® accepted public school teachers from sixteen school districts in eight states and the District of Columbia to participate in six national seminars held at Yale University. 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.

Teachers Institutes are educational partnerships between universities and school districts designed to strengthen teaching and learning in a community's high-poverty, high-minority 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 teachers, named Yale National Fellows, are from school districts that are planning or exploring the establishment of a new Teachers Institute for the Bay Area, CA; Chicago, IL; the Diné Nation, AZ and NM; the District of Columbia; Pittsburgh, PA; Richmond, VA; San José, CA; and Tulsa, OK. Other National Fellows come from existing Teachers Institutes located in New Castle County, DE; New Haven, CT; and Philadelphia, PA. Overall, nearly two thirds of the teachers were participating as National Fellows for the first time.

The National Fellows attended an Organizational Session of the seminars held in New Haven on April 29-30. The seminars reconvened during a ten-day Intensive Session from July 11-22 and concluded in mid-August when the Fellows submitted their completed curriculum units. The six seminars were:

- “Contemporary American Indian History,” led by Ned Blackhawk, Professor of History and American Studies;
- “Energy Sciences,” led by Gary W. Brudvig, Professor of Chemistry;
- “Why Literature Matters,” led by Janice Carlisle, Professor of English;
- “The Number Line in the Common Core,” led by Roger E. Howe, Professor of Mathematics;
- “ ‘Over the Rainbow’: Fantasy Lands, Dream Worlds, and Magic Kingdoms,” led by Joseph R. Roach, Sterling Professor of English and Professor of African American Studies, of American Studies, and of Theater Studies; and
- “Making Sense of Evolution,” led by Paul E. Turner, Professor of Ecology and Evolutionary Biology.

The 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 heightens their leadership in an existing Teachers Institute or prepares them to lead the development of a new Teachers Institute. Each

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. In these ways the curriculum units assist teachers in engaging and educating the students in their school courses.

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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