



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
2016 Volume IV: Physical Science and Physical Chemistry

Preface

In February 2016, thirty-nine teachers from eighteen New Haven Public Schools became Fellows of the Yale-New Haven Teachers Institute® to deepen their knowledge of the subjects they teach and to develop new curricular material to engage and educate the students in their school courses. Founded in 1978, the Institute is a partnership of Yale University and the New Haven Public Schools, designed to strengthen teaching and improve learning of the humanities and STEM fields in our community's schools. Through the Institute, Yale faculty members and Public Schools teachers join in a collegial relationship. The Institute is also an interschool and interdisciplinary forum for teachers to work together.

The Teachers Institute has repeatedly received recognition as a pioneering model of university-school collaboration that integrates curriculum development with intellectual renewal for teachers. Between 1998 and 2003 it conducted a National Demonstration Project that showed the approach the Institute had taken for twenty years in New Haven could be tailored to establish similar university-school partnerships under different circumstances in other cities. Based on the success of that Project, in 2004 the Institute announced the Yale National Initiative to strengthen teaching in public schools®, a long-term endeavor to influence public policy on teacher professional development, in part by establishing in states around the country exemplary Teachers Institutes following the approach developed in New Haven and implemented elsewhere. 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.

Teachers had primary responsibility for identifying the subjects on which the Institute would offer seminars in 2016. Between October and December 2015, teachers who served as Institute Representatives canvassed their colleagues in each New Haven public school to determine the subjects they wanted the Institute to address. The Institute then circulated descriptions of seminars that encompassed most teachers' interests. In applying to the Institute, teachers described unit topics on which they proposed to work and the relationship of those topics both to Institute seminars and to courses they teach. Their principals verified that their unit topics were consistent with district academic standards and significant for school curricula and plans, and that they would be assigned courses or grade levels in which to teach their units during the following school year.

Through this process four seminars were organized, corresponding to the principal themes that emerged during the canvassing. The seminar entitled "Physical Science and Physical Chemistry" was led by Charles A. Schmuttenmaer, Professor of Chemistry. Between March and July, Fellows participated in seminar meetings, studied the seminar subject and their unit topics, and attended a series of talks by Yale faculty members.

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

The units, which were written in stages over time, contain five elements: content objectives, teaching strategies, examples of classroom activities, lists of resources for teachers and students, and an appendix on the academic standards the unit implements. They are intended primarily for use by Institute Fellows and their colleagues who teach in New Haven. They are disseminated on Web sites at teachersinstitute.yale.edu and teachers.yale.edu. We encourage teachers who use the units to submit comments at teachers.yale.edu.

The Yale-New Haven Teachers Institute is a permanently endowed academic unit of Yale University. The New Haven Public Schools, Yale's partner in the Institute, has supported the program annually since its inception.

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New Haven

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