

The IDEAS Institute: A Vehicle for Science Teacher Education and Outreach to Minority Communities

The Institute for the Development of Education in the Advanced Sciences (IDEAS) is a new program at Hofstra University that was initially established as part of the Gen*NY*sis Project, a biotechnology funding initiative of the New York State Legislature. IDEAS is now a permanent structure of this private university.

IDEAS provides forums for the general public, local public and private school teachers and administrators, and college educators to focus on cutting edge issues in science and technology. Through lectures, workshops, field trips and seminars the Institute seeks to create public visibility and enhanced understanding of advances in science and technology. It further seeks to encourage greater interest in advanced study in the sciences by enhancing the skills of pre-college and college science educators.

As part of its programming, IDEAS uses the partnerships and liaisons established through state and federal grant funded programs for minority teachers and students at Hofstra University to target minority districts on behalf of the professional development of the districts' K-12 science teachers. To that end, the IDEAS Institute promotes on-going relationships with minority district teachers in the hopes of establishing a love of science and fostering their ability to see and teach the connections of science to their daily life, inside and outside the classroom by including “out-of-the-box” science experiences in the workshops.

Our philosophy and pedagogy in action requires that we establish certain **pre-conditions for teacher development. We emphasize:**

- The significance of establishing relationships: forging collaborations
- An understanding of student engagement
- An appreciation of science in one's daily life
- Locating one's scientific self
- Reaching the possibilities for making connections across disciplines
- Looking at engineering design to enhance science and mathematics learning.

IDEAS addresses its role in professional development by considering topics that are not typically offered in formal science education programs but that address needed areas of development. All day workshops are given and attended by an average of 10- 20 teachers. Many teachers attend more than one event. The topics addressed are listed below, along with the major themes of each workshop. Exit surveys demonstrate enthusiasm and a desire for further work. Topics suggested for future workshops include more field trips and physics and chemistry work. We became aware from the surveys that, for secondary science teachers, there was little subject specific professional development available beyond the Masters degree. At the elementary level, many teachers expressed a lack of science background in their professional preparation. IDEAS is filling a void for both of these groups of teachers.

Workshop Topics Include:

Science in the daily life of the classroom

Engaging students in a search for meaning;

Using materials from daily life;

Finding multiple ways to express meaning;

Make connections to writing, design and construction.

Science activities that "work"

Students are engaged and determine the design of the investigation;
Students have a reason to explore;
There are many ways to solve the problem;
Students can seek answers to their own questions.

Using i-videos in chemistry and physics

Teachers identify difficult concepts to demonstrate;
They create a story board to accompany visuals to explain a concept.
They make videos using i-video software that illustrate the concept.
The i-video is a teaching and learning tool.

Geology for teachers and travelers

2-day and 1-day field trips to explore New York State
How do the rocks reveal the history of the state's formation.
An explanation of the local geologic formations.
Local relevance for students and teachers.

Teachers as Researchers

Professional development from the inside-out.
Teachers select an area of study;
They explore tools for data collection.
They analyze findings and generate more questions.

Two Week Summer MST Institute

Teacher participants work on problem solving design and inquiry;
Participants tailor activities to specific grade level curriculum.
Children join the teachers the second week for authentic problem solving.
Five follow-up days of in-service during the school year solidify these relationships forged in the summer.

Overarching Themes- Seeking relevance, meaning, connections to each other and to the larger natural world. Empowering teachers and students to ask their own questions and seek their own answers!