CENTER FOR ULTRAFAST OPTICAL SCIENCE

K-12 Education Outreach

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Part of the
Southeastern
Michigan
Math-Science
Learning
Coalition

Coalition Model

Most education outreach efforts of the University of Michigan's Center for Ultrafast Optical Science are now under the umbrella of the Southeastern Michigan Math-Science Learning Coalition, which we helped to form six years ago. The coalition model enables us to collaborate in flexible ways with many groups and individuals who are all determined to achieve the same goals of improving children's lives and schooling and supporting them in their learning and future planning. The vast majority of our volunteers come to us through the student organization we sponsor, *Reach Out!*

What We Do

We support a movement across campus and the broader community to:

1. Establish science and career clubs in schools, churches, and community centers;
2. Link academic and career mentors with youth;
3. Help children to engage in their own research and to teach science to peers; and
4. Maintain a Web site to collect resources, recruit volunteers, and report on programs.

Science Clubs

Goals:

1. Establish science clubs in schools, churches, and community centers.
2. Help children teach science and engage in their own research.

Achievements:

- Not including one-time events, 414 volunteers had science fun with 1051 children in 73 separate science clubs that met more than 8 times each.
- An additional 50 volunteers conducted science eight, one-time, science fun days for another 303 children.
- More than 30 upper elementary students were trained as Science or Technology Wizards, who share their expertise with other children in school and community groups. Wizards came to UM from Pontiac Owen Elementary School for a series of visits with university scientists and engineering faculty, and then adapted what they learned to teach to their peers.
- The Pontiac Youth Task Force on the Environment investigated leaking underground tanks on city property and reported their findings to the City Council.
- Some 800 hands-on science lesson plans and activities are posted on our Web site.

Career Clubs, Mentoring & Fairs

Goals:

1. Foster learning communities that engage all ages and sectors of the community in common work.
2. Establish career clubs in schools, churches, and community centers.
3. Link career mentors with children and teens.

Achievements:

- First Career Connect Fair held in May 2001 at the Neutral Zone Teen Center. Support from Kiwanis for refreshments, advertising, and presenters.
- Nineteen volunteer Kiwanians took 28 teens through a multi-week personal discovery and career exploration process culminating in targeted job shadowing.
- Eleven mentors worked with groups or clubs to help dozens of young people to explore their personal strengths and career options.
- Over 230 career exploration resources are on our Web site, including presenters and tour and job shadowing opportunities to see the "real world."
- Combining personal, academic, and career mentoring, 23 counselors led 37 children from Ann Arbor subsidized housing sites through summer day camps over three years. Many of these children also see us regularly at our community science clubs during the school year.

Academic Mentoring

Goals:

1. Foster learning communities that engage all ages and sectors of the community in common work.
2. Link academic mentors with youth and help them gain confidence in doing science and math.

Achievements:

- Over 746 mentors helped 767 teens with ongoing academic tutoring and personal support.
- Five mentors shepherded 14 teens through summer-long algebra and chemistry study, some for Community Resource credit with Ann Arbor Public Schools.
- We developed a series of workshops to help teens with understanding their learning styles, looking at time management skills, gaining study and test taking skills, forming effective study groups, and taking charge of their own lives.

Stakeholder Development

Goals:

1. Assist teachers in incorporating hands-on science into their classrooms and schedules.
2. Foster cooperation among generations, classes, races, and communities to work on common goals supporting young people.
3. Use technology to disseminate information so that none of us need "reinvent the wheel."

Achievements:

- We served more than 400 teachers with our inservices, tech training, in-class science activities, and academic or career mentoring programs.
- Our UM volunteers came from 18 schools or colleges, and were affiliated with at least 34 different student organizations.
- We provided extensive personal coaching to (and often created temporary Web sites for) people from nearly 30 community groups who were beginning new initiatives with goals related to our own.
- Our Web site contains reports on our science clubs, academic mentoring programs, and various career mentoring formats; information on how to replicate them; plus a variety of other resources useful for science outreach, career exploration, and community coalition-building. It records nearly six million successful page requests per year, constituting more than 10% of the EECS Web Server's total traffic. Another 7,600 users request nearly 10,000 Web pages a year from the *Reach Out!* site. Users come from the fifty United States, three territories, and 63 countries—that we know of.

All of the above references the work of CUOS K-12 Outreach, the Coalition, and *Reach Out!* from 1995–2001.