

Teaming Up to Make a Difference for Florida's K-12 Students



Felix Peguero, PE, co-chair of the Miami Chapter K-12 program, at the Ada Merritt School K-8 Center Career Day, May 2009.

By Jennifer E.C. Porter, PE, 2008-09 Chair K-12 Committee

The establishment of the K-12 Committee in 2005 demonstrated the Florida Engineering Society's (FES) commitment to reaching out to all students in primary and secondary schools, with the focus of introducing each student to engineering concepts and activities. Local FES chapters soon followed suit. We currently have active K-12 committees in 14 of FES' 20 chapters. It is through the hard work and dedicated volunteerism of the local K-12 committees that the vision of the K-12 committee is being furthered throughout the schools in Florida... and we're not stopping yet!

As we've worked with schools and educators—making presentations, taking part in demonstrations, judging science fairs, and becoming mentors—we've also made connections within our communities. Many local FES volunteers are now coordinating their events with other organizations and individuals, and are achieving tremendous success. In fact, FES volunteers have discovered that we can increase our reach exponentially by teaming with professionals from other groups that have the same interest in bringing engineering awareness to students within Florida. Some of the collaborative efforts between FES volunteers and other organizations are highlighted.



The National Center for Simulation (NCS) is headquartered in the Central Florida Research Park in Orlando, which is home to the world's largest cluster for computer simulation and modeling, including more than 180 modeling, simulation and training companies, the University of Central Florida, and military simulation and training commands..

Central Florida Chapter, the National Center for Simulation, and the University of Central Florida

In February of 2009, the Central Florida Chapter K-12 Committee began outreach efforts with the National Center for Simulation's (NCS) Education Committee, which was formed in 1993 as the link among the defense industry, government, and academia on behalf of the entire simulation, training, and modeling community. FES' K-12 Committee's initiative on education outreach was presented to NCS, and dialogue was opened up between the two committees for future coordination.

The Central Florida Chapter also continues its working relationship

with the University of Central Florida College of Engineering & Computer Science's Engineering Outreach Program. The K-12 Committee and the college work together to coordinate opportunities where both groups can become involved in yearly activities geared towards K-12 Engineering outreach with two specific areas of interest:

- 1) "Community of Tomorrow" program, whereby FES volunteers can assist online as technical advisors for school projects related to community development
- 2) Engineer-Teacher Connection database, which involves working with the NCS' Outreach Program to pilot an online database for engineers and teachers.

Calusa Chapter and the Massachusetts Institute of Technology Club

The Calusa Chapter K-12 Committee has been successful creating a partnership with the local MIT Club, and the two groups are called on as needed to fill speaking requests from teachers. The MIT Club has access to members (often retired engineers), many of whom have accomplished some impressive goals, who can make visits to classrooms. For example, Dr. Martin Zomback, one of the volunteers who has worked with the Calusa Chapter K-12 Committee, wrote an important book on astrophysics and worked at the Harvard-MIT

Observatory. Students have also attended MIT Club meetings, where some of the speakers each year are from MIT or are MIT alums. One of these speakers the past year was Dr. Richard Schrock, who won the 2005 Nobel Prize in Chemistry. The event allowed students to enjoy lunch with a very down-to-earth gentleman who spent time explaining how he got into chemistry, which was a chemistry set in junior high school.

Miami Chapter, the American Society of Civil Engineers, and the Cuban-American Association of Civil Engineers

As highlighted in the July 2009 *FES Journal*, the Miami Chapter K-12 Committee has successfully established relationships with two other organizations within the community. The Miami-Dade branch of the American Society of Civil Engineers (ASCE) is an extremely active group of engineers that provides a variety of programs that enhance the professional and technical development and provides opportunities to interact professionally and socially with engineering colleagues. The K-12 committee has coordinated with ASCE's Outreach Committee to promote themselves as a mentoring resource for K-12 students and teachers.

The Cuban-American Association of Civil Engineers (C-AACE) was established in Miami in 1961 "to obtain the advancement of the science and profession of engineering." The C-AACE has been active in providing volunteers for speaking engagements and providing scholarships to engineering students.

Their collaborate efforts have created a database that has been coordinated to include volunteers from all three organizations, successfully connected teachers and engineers, and created new value in the Miami-Dade school system through presentations to hundreds of students.

FES and the Florida Engineering Education Conference

The FES K-12 Committee has developed a mutually beneficial relationship with the Florida Engineering Education Conference (FEEC), held each year at the University of Central Florida. This

conference brings together K-12 administrators and teachers, STEM administrators and teachers, and K-12 counselors in order to discuss ways to heighten pre-college engineering education awareness.

For the past two years, FES past presidents have provided keynote addresses to the FEEC, allowing FES representatives the opportunity to further the message that K-12 students will benefit from the introduction of engineering concepts and demonstrations in the classroom. Most recently, past FES president Mark Mongeau presented a speech entitled *The Things We Build* at the 2009 FEEC. Other sessions at the conferences included a presentation on supporting engineering outreach programs; integrating engineering into the K-12 classroom; and industry, government, and professional organization-sponsored engineering education programs.



Dr. Miaoulis discusses the necessary partnerships between the state department of education, federal government, school districts, teacher groups, colleges, universities and museums and industry to include engineering as a new discipline in public schools.

FES and the Museum of Science, Boston

For the past three years, John Hall, PE has been working with and gaining insight from Ioannis Miaoulis, President of the Museum of Science in Boston. Massachusetts was the first state in the nation to include engineering as a topic in its learning standards, and Dr. Miaoulis played an instrumental role in making that happen. At the 2009 FES annual conference, Dr. Miaoulis participated as a keynote speaker, and also spoke to the engineers and educators who attended the K-12 session on Friday, August 7.

During those sessions, Dr. Miaoulis emphasized the five reasons that lessons related to engineering and technology

should be included in the school curriculum. Those reasons included:

- Children need to know about the human-made world, along with the natural world. Engineering incorporates all areas of education.
- An education in engineering leads to more performance-based learning and better problem-solving skills.
- Engineering makes math and science relevant.
- The number of engineers is decreasing as more students choose careers in medicine, law, education, and other areas.
- Engineering education helps children with three-dimensional visualization skills, which are suffering due to the use of video games, texting, and other flat screen activities.

Dr. Miaoulis sees great opportunities in Florida for introducing engineering into the curriculum, and the FES K-12 Committee has formed a great partnership with him and the Museum of Science.

The committee continues to work toward introducing all students to engineering, and with the help of others in the community, the committee will continue to take a leading role in assisting Florida in becoming a model for excellence in K-12 engineering awareness and education. ■

About the Author:



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