

Education IS Important

by Jack G. Hehn, AIP Education Fellow and past Director of the Education Division

Editorial Note: In August of this year, American Institute of Physics Education Director Jack Hehn announced his retirement after twelve years of exceptional service to AIP and its many stakeholders. The Education Division at AIP has housed SPS and Sigma Pi Sigma since 1968. His retirement comes after more than forty years of service to students, faculty members, physics departments, various educational systems and physics groups in Texas, the National Science Foundation, the American Association of Physics Teachers, and AIP—in fact, the entire extended physics community and beyond. Among the many notable projects in which Jack played an instrumental role are some of the best known names and acronyms in physics education: Active Physics, Powerful Ideas in Physical Science, SPInUP, ComPA-DRE, PhysTEC, and the SPS Intern program, to name only a few. Beyond that, though, Jack's influence can be seen through the breadth and depth of his many contacts in the physics community, in education circles, and the broader world of science and education policy. Jack will continue his service to AIP as education fellow, consulting on a variety of ongoing projects. We welcome this chance to see the education scene from his perspective.



Jack G. Hehn. AIP photo.

I have greatly appreciated the opportunity to work with and serve the science and science education communities over the last twenty years. I have seen significant changes in science education over the forty-year span of my academic and administrative career; most of the changes are positive but some not so. Although I am retiring from AIP, I fully intend to continue to interact with friends and colleagues and offer my services and knowledge where it might be useful.

I offer a few observations related to progress in American education:

- Science and scientists are respected in America, and scientists are learning that it is vitally important to communicate to citizens and taxpayers that the quality of their lives is improved by science. Teachers are spending more time relating science and engineering concepts

to the context of students' lives. Science can and should inspire young people to make a difference.

- More students in more schools and colleges are learning physics with a broader curriculum and improving pedagogy available to them.
- The focus is shifting from what is taught to how students can demonstrate what they have learned. Significant research efforts are being undertaken to determine what and how students learn, and

instructors are applying those findings in and out of class.

- There is an important and growing emphasis on the premise that ALL students must be given the opportunity to learn science, through core ideas in disciplines,

practices of science, and unifying cross-cutting concepts. This reform agenda is based on implementing national pre-K–12 science standards—statements about what students should know and be able to do. This effort often emphasizes how students can use their own powers of observation to learn what science is and can do and what the limits of science may be.

- At the postsecondary level, thriving physics departments are creating a

strong “sense of belonging” and community among their undergraduate majors and with the faculty, staff, graduate students, and alumni of the department. SPS chapters are important to that sense of community.

- There is increasing attention being given to the science preparation of future teachers at all grade levels. While the school environment is important, teachers have the most influence on positive student learning gains. Teachers need career-long opportunities and support to continue their professional development.
- Networks and resource collections (like ComPA-DRE) are being developed to promote community and communication among physics teachers and students at all levels. Technology will play an ever-increasing role in education.
- The improving quality of students' work will ensure a future for the scientific enterprise, and introducing more diversity will improve that future workforce.

Education IS important... As little as schools may change ... the students change dramatically every year.

Funding support for education, and for science, is under stress and that stress will continue and likely increase. Scientists and science teachers, in collaboration, must continue to take a more

Spotlight on Hidden Physicists

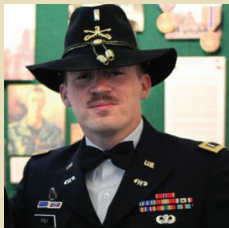
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active role in advocating for appropriate and supportive science education policy at the local, state, and federal levels. Education, whether graduate, undergraduate, secondary, or elementary, is a much more complex enterprise than most pundits and policymakers will acknowledge. The national pattern of postulating dramatic progress in education produced by simplistic solutions while failing to make the promised or necessary investments has caused more harm than good in many cases.

A great deal of reform and progress has come through projects supported by federal and state agencies, and we should continue to strongly support those agencies, their program officers, and those projects. Unfortunately, a significant number of experimental programs often last only long enough to demonstrate preliminary results and fail to make fundamental changes in the system. There are many models of good science education, and they should be widely reported.

I must thank the many mentors I have had, but they are too numerous to list. I believe they know who they are. I have confidence that AIP and AIP's Member Societies will continue to support science education and policy in creative and diverse ways. Education is a complex enterprise that is deeply embedded in a culture and, in the words of Melba Phillips, "Unlike most physics problems, problems in education do not stay solved." 🐞

1LT Joshua D. Frey **Anti-Terrorism/Force Protection** **Officer, 3d Armored Cavalry Regiment** **Ft. Hood, TX**



I received my Arte Baccalaureus with a double major in physical sciences and religion from Ripon College in Ripon, WI, in 2005. While there

I was a member of the Reserve Officer's Training Corps, from which I received a commission into the Army Chemical Corps as a Second Lieutenant. I was also active in our resurrected SPS chapter and Physics Fun Force and was inducted into ΣΠΣ. Throughout my life I have been interested in all aspects of science, and I have always felt a sense of wonder and delight when speaking or reading about scientific discoveries and the ways science influences our everyday life.

My most recent job was as Anti-Terrorism/Force Protection Officer for the Contingency Operating Site (COS) Kalsu in Babil Province, Iraq. In this role I served as the primary advisor for the base commander regarding defensive planning, protection technology implementation and acquisition, and access control and internal security operations. We utilized and integrated a wide array of elevated sensors, x-ray scanners, biometric identification devices, as well as military working dogs to simultaneously keep the population of the base safe from unwanted intrusion while also allowing for access by local Iraqis who provided basic life support services. I also worked with military police, counter-intelligence, human intelligence, and geospatial intelligence specialists to integrate the various capabilities available to us.

While all of that certainly had very little to do with physics, it required a great degree of critical thinking and experimentation to maximize the impact of each system at our disposal, while also ensuring that they were used efficiently. One

of the most difficult parts of the job was figuring out where limited assets would best be used to create a stronger "net" to prevent attacks. Managing equipment maintenance and downtime, working with civilian operators, and feeding the demand for information were something that, while part of the life of any physicist in the United States, were made all the harder by the conditions in Iraq and the nature of stability operations. While "science" is not something I do often, the scientific way of thinking has helped me every day.

Dr. Jacqueline Hartt **Registered Patent Agent,** **GrayRobinson, P.A.**



Dr. Jacqueline E. Hartt, a registered patent agent in the Orlando office of GrayRobinson, P.A., was recently elected secretary of the executive board of the Na-

tional Association of Patent Practitioners (NAPP) during its 2011 annual conference. She will serve a two-year term.

Hartt focuses her practice on intellectual property and patent prosecution. Throughout her career she has represented local, national, and multinational corporations in various technology areas including computer software, business methods, medical and surgical implements and methods, laser technology, and chemical, pharmaceutical, and mechanical inventions. She also gave a presentation titled "Inventorship and Ownership in Patent Practice" at the NAPP annual conference.

Dr. Hartt received both her doctorate and undergraduate degrees from Rensselaer Polytechnic Institute, where she was inducted into Sigma Pi Sigma in 1971. Hartt also conducted postdoctoral research at Brookhaven National Laboratory, University of California, San Francisco, and National Institutes of Health. 🐞