Letter from the Chair

Susan Blessing, Florida State University

As I write this, sitting in the Minneapolis airport, very late (sorry Jennifer – at least it’s still Spring!), on my way home from the April Meeting, I’m thinking about the great talks the Forum on Education sponsored at the March and April Meetings. I hope you were able to attend some of them and learn something! I certainly did and feel more confident teaching a new-to-me class (Quantum Mechanics, an invited session in April) in the fall.

Someone asked me about the difference between FEd and GPER (the Group on Physics Education Research). I think of GPER as a home for people who study physics education and FEd as the place for practitioners and supporters of education in physics. Since we all have experienced education in physics, we know that some things can be done better (thanks GPER!), and we know that education in physics has benefitted all of us and is valuable to society at large. Everyone in APS should be a member of FEd!

The education community in APS is warm and friendly – one of our invited speakers at the April Meeting commented that these types of sessions are more comfortable and interactive than the scientific sessions.

We were able to honor many excellent educators at the APS Meetings this year:

- Rae Robertson-Anderson received the Prize for a Faculty Member for Research in an Undergraduate Institution and spoke about how “The whole is more than the sum of its parts.”
- Laura Clarke received the Jonathan F. Reichert and Barbara Wolff-Reichert Award for Excellence in Advanced Laboratory Instruction and described “Sustainable laboratory experiences spanning the physics curriculum to address diverse students and career preparation.”
- The Excellence in Physics Education Award went to the PICUP Collaboration. Robert Hilborn and Norman Chonacky provided “An historical overview of computing in physics education,” Danny Caballero discussed “Supporting the integration of computing in physics education,” and Larry Engelhardt gave us “Resources for integrating computation into undergraduate physics courses.”
- The Improving Undergraduate Education Award went to Illinois Wesleyan University and University of Alabama at Birmingham.
- And last, but certainly not least, six of our colleagues were named Fellows of the American Physical Society: Alfonso M. Albano, Crystal D. Bailey, Juan Ramon Burciaga, Laird H Kramer, Mitchell Wayne, and Paul Woafo.

If you are interested in learning more about their work, I encourage you to reach out to them.

Geraldine Cochran is our new Vice Chair, so will work toward the slate of candidates for the FEd Executive Committee for this fall’s election – please contact her if you have suggestions for new EC members or would like to get involved yourself (geraldine.cochran@rutgers.edu).

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Nominate Colleagues for Fellowships and Awards!

Eric Brewe, Drexel University, Past Chair of FEd

One of the many things that I have seen the Forum on Education do well over the last four years has been to honor people through APS Fellowship, the Excellence in Physics Education Award and the Reichert Award for Excellence in Advanced Laboratory Instruction. I want to encourage you to nominate candidates for these awards.

Nominating people for these awards is relatively painless, and is rewarding for both the nominee and the person doing the nominating. It is a great way to recognize people for outstanding efforts in education. Nominees are inevitably very grateful to know that their work is valued by their colleagues.

Fellowship is the way the APS recognizes a broad set of its members for outstanding contributions to the field of physics. The Forum on Education puts forward nominations of members who have made significant contributions to physics education, which do not have to involve research in physics education. Any member of the APS can nominate any other member of the APS for this honor. In order to nominate someone for APS Fellowship you will have to put together a citation (both short and long form), a letter, and a CV of the nominee as well as getting at least one other person (and up to three others) to write a letter in support of the nominee.

Please consider a diverse set of possible candidates, including women, members of historically marginalized groups, and people at smaller institutions. You can find a listing of all Fellows selected by the Forum at https://www.aps.org/programs/honors/fellowships/archive-all.cfm?url_id=FED. You may be surprised to see that some persons whom you would expect to see on this list are not there—most likely, nobody has yet taken the time to nominate them!

Nomination instructions can be found at the APS Honors web site: https://www.aps.org/programs/honors/index.cfm. The deadline for Fellowship nominations is 1 June 2023. If you have ideas for colleagues to nominate, but have questions about how to assemble a strong nomination, or would like to be connected with a possible co-nominator, please get in touch with me. It does take some time to assemble a nomination and requires another APS member to provide a supporting letter.

In addition to APS Fellowship, I also want to encourage you to submit nominations for the APS education-related awards that FEd oversees. The Excellence in Physics Education Award honors either a team or a single individual for sustained commitment to excellence in physics education. You can find more information at https://www.aps.org/programs/honors/prizes/education.cfm. The Jonathan F. Reichert and Barbara Wolff-Reichert Award for Excellence in Advanced Laboratory Instruction honors outstanding achievement in teaching, sustaining, and enhancing an advanced undergraduate laboratory course or courses. Its nomination procedure and past winners can be found at https://www.aps.org/programs/honors/prizes/lab.cfm. For both awards the nomination deadline is 1 June 2023, the same as the Fellowship deadline.

The final education award I want to make you aware of is the Committee on Education Award for Improving Undergraduate Physics Education. This award recognizes a few physics departments (not individuals) or programs each year for improvement of their undergraduate physics education programs through implementation of best practices. It offers the opportunity for a department or program to receive national recognition for its undergraduate education efforts, which can be valuable both internally and externally. More information can be found at https://www.aps.org/programs/education/undergrad/faculty/award.cfm and the deadline is 15 June 2023.

Surely you know of individuals whose efforts on behalf of physics education deserve recognition. Please nominate them—it is worth the effort!
What additional partnerships can the STEM community leverage to ensure that future teachers have the financial support necessary to meet the costs of their education?

Fostering Networks and Personal Connections
Establishing strong partnerships with and providing relevant support for current STEM teachers is also essential to preparing the next generation of chemistry and STEM teachers. A number of these initiatives have been highlighted in prior issues of this publication. In 2014, ACS launched the American Association of Chemistry Teachers (AACT), a professional community by and for K–12 teachers. AACT’s membership is comprised primarily of K–12 teachers but also includes members from colleges and universities, pre-service teachers, as well as individuals working in other sectors of the chemical industry. AACT is a community of passionate teachers of chemistry who share strategies, find support, ask questions, and overcome everyday classroom challenges.

Networks and personal connections are also fostered through the ACS Science Coaches program5, which pairs chemists with AACT teacher members for one school year. An additional Science Coaches’ program benefit is a $50 gift certificate to the teacher’s school to enhance science education activities. These virtually beneficial relationships promote community and professional growth. Additionally, many ACS Local Sections frequently partner with teachers of chemistry to carry out science outreach activities and to celebrate their contributions to chemistry education through awards and other recognition efforts.

How do we promote the formation of more and stronger partnerships with current STEM teachers?

While this article has described some of the initiatives in which we are involved, there are a number of early teaching activities to explore different facets of teaching. A robust Learning Assistant (LA) program has run their own help sessions for physics courses while providing pedagogical training that focuses on topics like questioning strategies and gauging student knowledge. The Early Teaching Experience in Math and Science (ETEMS) program has students work with faculty mentors to understand the Next Generation Science Standards (NGSS) and lesson planning. Participants also go into local classrooms to observe, and even try out, their own lessons and interview teachers to get a better understanding of the job. Whenever possible, our department employs students as tutors. Activities at this level are relatively low stakes, in that students do not have to commit to longer term teaching careers, and they explore the profession while building teaching-related skills.

For students who have solidified teaching as their career path, two major programs help them more easily transition to the CSUSB credential program. The College of Education Senior Program allows undergraduates to take up to three courses prior to entering the program. The Noyce program is a partnership between CSUSB and the San Bernardino City Unified School District and provides mentoring and substantial scholarships for both undergraduate STEM majors and credential students who commit to working in Title I schools within the San Bernardino City Unified School District.

Building a pre-service teacher recruitment pipeline
Sara J. Callori, California State University San Bernardino

The national need for highly-qualified physics teachers will see more physics alumni in local districts and the creation of a network to sustain both pre-service and current teacher interaction and professional development. This work is supported by the National Science Foundation and the Physics Teacher Education Coalition (PhysTEC) under grant no. D07990. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Sara J. Callori is an Associate Professor in the CSUSB Department of Physics and Astronomy. In addition to her work in experimental condensed matter, she is currently PI in PhysTEC recruiting and Noyce grants and is on the board of directors of the Advanced Laboratories in Physics Association (ALPHA).

Leveraging Resources
A number of existing resources have been vital in our efforts to produce more physics teachers. On a campus level, our math department is the enforcement of Mathematics Education (CME), which, luckily for us, let the science disciplines tag along on their efforts. CME handles the administration of both the ETEMS and Noyce programs, making it easy for physics faculty and students to tap into these existing structures. We also have a fantastic physics alumni who teaches in a nearby high school and has been a boon in mentoring future teachers and allowing them into his classroom for observations and sample lessons. The national Get The Facts Out campaign provides easy-to-use resources for career presentations both in open houses and in our Tools for Physicians course.

One aspect for our population that can’t be undersold is that, whenever possible, we seek to financially compensate students for their time spent as part of these activities. CSUSB serves the most economically disadvantaged region of the state and almost all our students need to work at least part time while attending college. Providing either payment or scholarships can make a huge difference in their ability to participate in pre-service activities. Funding through PhysTEC and the U.S. Department of Education have helped sustain our LA program. The CSU system’s Mathematics and Science Teacher Initiative provides funds that can be used very flexibly, from supporting STEM students to paying for testing and background checks for student teachers. The NSF Noyce program provides a large amount of scholarship support and a direct route to employment in the local school district.

Overall, over the last few years we have focused on bringing together these resources and adding new ones to have a more cohesive and accessible path towards physics teaching. We have noticed an increase in the number of students who identify an interest in teaching and those going directly to our credential program. We hope that as we are able to sustain this pipeline, we will see more physics alumni in local districts and the creation of a network to sustain both pre-service and current teacher interaction and professional development. This work is supported by the National Science Foundation and the Physics Teacher Education Coalition (PhysTEC) under grant no. D07990. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
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Upcoming newsletter deadlines:
Summer 2023: June 15, 2023
Fall 2023: October 15, 2023