

MINI-REVIEW | *Institute on Teaching and Learning*

How do the Institutes on Teaching and Learning (ITLs) nurture the members of the Physiology Educators Community of Practice (PECOP)?

Barbara E. Goodman

Division of Basic Biomedical Sciences, Sanford School of Medicine, University of South Dakota, Vermillion, South Dakota

Submitted 31 March 2017; accepted in final form 21 April 2017

Goodman BE. How do the Institutes on Teaching and Learning (ITLs) nurture the members of the Physiology Educators Community of Practice (PECOP)? *Adv Physiol Educ* 41: 354–356, 2017; doi:10.1152/advan.00050.2017.—Do you teach physiology? Do you use best practices when you teach physiology? Have you ever thought about conducting educational research? Do you need collaborators to help with ideas for educational research or to expand your research populations? The American Physiological Society (APS) Teaching Section has developed a biennial Institute on Teaching and Learning (ITL) through the APS Conference Program to address these issues. The first institute was held in June 2014, and the second institute was held in June 2016. A Physiology Education Community of Practice (PECOP) was created to help connect the institute participants and other physiology educators and to share evidence-based teaching in physiology at all education levels. The 2018 APS ITL will be the next meeting to learn best practices, to share ideas with colleagues, and to find collaborators in improving the teaching of physiology for students. The meeting will include workshops modeling best practices, plenary talks about hot new issues in physiology and science education, and poster sessions and informal meals to discuss interests with colleagues. Even if one's primary responsibility is bench research or administration, the training from the institute will improve efficiency and effectiveness when teaching. The two prior ITLs (2014 and 2016) were highly evaluated by educators of both undergraduate and professional students who spent a week together emphasizing improvement in their teaching. This paper reports the outcomes of the 2016 ITL and encourages participation in the upcoming ITL in Madison, WI, June 18–22, 2018. Watch the APS Conference site for more information about the 2018 ITL (<http://www.the-aps.org/mm/Conferences/APS-Conferences>).

ITL; PECOP

THE AMERICAN PHYSIOLOGICAL SOCIETY (APS) Teaching Section, with the support of the APS Education and Meetings Services Offices, offered its first biennial Institute on Teaching and Learning (ITL) June 23–27, 2014, at the College of the Atlantic in Bar Harbor, ME. A National Science Foundation (NSF) Research Coordinating Network for Undergraduate Biology Education incubator grant of \$50,000 to Marsha Matyas, Barb Goodman, and Jenny McFarland enabled the ITL organizers to recruit and host 15 new Physiology Education Community of Practice (PECOP) fellows from 2-yr or minority-serving institutions as full participants. The NSF grant also partially supported institute leadership, including thought leaders and thought leader helpers who facilitated activities during the institute and continued by seeding and encouraging communications among the new PECOP members (all participants in the institute) over the next 2 yr of the growing community. The

total number of participants at the 2014 ITL was 89 (including speakers), plus 4 APS staff and 4 guests.

Overview of 2016 ITL

The APS Teaching Section created an organizing committee led again by Barb Goodman to plan and implement the 2016 Institute on Teaching and Learning with the assistance of the APS Meetings Office. The second ITL occurred June 20–24, 2016, at the Madison Concourse Hotel in Madison, WI. The Organizing Committee for the 2016 ITL was largely made up of volunteers who participated in the 2014 ITL and who shared their ideas and expertise for setting up the program and schedule for the 2016 institute. The 2016 ITL attracted 124 registrants submitting 33 abstracts for posters. All meals except one were provided at the hotel for the participants to encourage informal conversations and potential collaboration among colleagues. A diverse program of 9 plenary presentations and 18 interactive workshops was offered. The 2016 ITL was specifically designed to target both physiology educators of undergraduate students and physiology educators of professional

Address for reprint requests and other correspondence: B. E. Goodman, Sanford School of Medicine, University of South Dakota, 414 E. Clark St., Vermillion, SD 57069 (e-mail: Barb.Goodman@usd.edu).

students, with a variety of workshop and plenary topics and informal collaboration sessions. The newly formed Physiology Majors Interest Group for physiology educators involved in programs that offer undergraduate physiology majors met and consulted during the ITL.

In addition to the input from the organizing committee, planning for this ITL was coordinated with the assistance of an informal network of course directors for physiology-based content in professional schools. A special preconference workshop on the use of ultrasound in teaching in professional schools was arranged and offered for separate enrollment on the opening day of the ITL. Since the preconference workshop was highly successful, similar opportunities for separate registration for future preconference workshops will be developed based on the interest and needs of the physiology educators.

Plenary Sessions at 2016 ITL

A collection of mini-reviews written by the plenary presenters from the institute are featured in *Advances in Physiology Education*, and those and other relevant references (2) are included in the references for this editorial. The opening keynote lecture for the 2016 ITL was given by Jay Labov of the National Academy of Sciences on “The National Landscape in Undergraduate STEM Education” (6), with a subsequent workshop facilitated by Labov on “Discovery-based Research in Undergraduate STEM Courses” (5). The additional plenaries included “The Faculty Role in the Classroom and Appropriate Tools,” an interactive presentation by Harold Modell; “Team-Based Learning in a Large Enrollment Class” by Jon Kibble and Christine Bellew (4); “A New Paradigm for Student Learners” by Terry Doyle (1), “Testing and Evaluation” by Stephen Haist and Aggie Butler from the National Board of Medical Examiners (3), “Supporting Faculty: Resources From Professional Societies and Online Communities” by Marsha L. Matyas (7), “The Central Role of Physiology in the Professional Curriculum” by Rob Carroll, “The Pipeline of Physiology Courses in Community Colleges” by Jenny McFarland and Pamela Pape-Lindstrom (8), and “Educational Leadership: Benefits of Stepping Outside the Classroom” by Tom Pressley. After each plenary session, there were three simultaneous workshop options describing or modeling various innovative teaching methods from which participants could choose. The three poster sessions at the end of each day were divided into themes (Best Practices in Professional School Physiology, Best Practices in Undergraduate Physiology, and Innovative Curricula throughout Educational Levels) and facilitated as poster discussions by a physiology educator interacting with the presenters and participants.

Evaluation of 2016 ITL

The atmosphere of the institute was very congenial and collegial throughout. The informal joint mealtimes, the receptions during the poster discussions, and the interactive presentations and workshops encouraged participants to meet new people and develop new professional colleagues. In fact, many participants shared with the organizer that the institute was the BEST MEETING in which they had EVER participated. Without effort, it was noted that the conference participants chose to meet with a variety of different physiology educators throughout the institute during the mealtimes and other opportunities

for informal small group gatherings. An exit survey was distributed to the ITL participants via Survey Monkey to provide evaluation data and assist with plans for future institutes. Seventy-three participants (not presenting) responded to the exit survey (84% response rate). Some key findings from the survey are highlighted below:

- 79% of the participants were either assistant (30%), associate (19%), or full professors (30%) who came from Biology or Life Science departments (32%), physiology departments (27%), or other (41%).
- 49% teach lower division undergraduate courses, 55% teach upper division undergraduate courses, 32% teach graduate courses, and 41% teach professional school courses (some teach in more than one type of program).
- 36% had also attended the 2014 ITL.
- 90% have tried a new teaching method, and 88% have collaborated with a colleague on developing or revising a teaching module, strategy, or assessment.
- While the programming was somewhat designed as an undergraduate education track and a professional education track, 41% of the participants concentrated in the undergraduate track, while 20% concentrated in the professional track; 38% diversified their participation by attending both “tracks.”
- 91% of the participants responded that they gained new ideas at the ITL for their teaching and/or professional development.
- Only 3 participants (4%) had to pay all of their expenses to participate in the ITL, while 78% paid only 0–20% of the costs.
- 89% of the respondents were either highly likely (71%) or somewhat likely (17%) to participate in future ITLs.

Planning for 2018 ITL

The final session at the 2016 ITL solicited 127 brainstorming ideas for programming at the 2018 ITL and a new organizing committee. Members of the 2018 Organizing Committee who volunteered were as follows: Beth Beason-Abmayr (Rice University), Jennifer Stokes (University of California at San Diego postdoctoral fellow), Jennifer Rogers (University of Iowa), Joan Lafuze (University of Indiana), Nancy Aguilar-Roca (University of California at Irvine), Andy Petzold (University of Minnesota Rochester), Kathleen Seiler (Champlain College), Steve Swoap (Williams College), and Christopher Trimby (University of Wisconsin). In addition, Tom Pressley agreed to be a co-organizer with Barb Goodman for the 2018 ITL.

By offering this institute on a recurring basis every other year, members of the American Physiological Society can plan ahead for a convenient time to attend the institute based on their career needs. The institute is scheduled during the summer break from teaching in a relatively inexpensive location. In addition, this institute is a good opportunity to introduce the education resources of the American Physiological Society to nonmembers of the APS with strong interests in teaching and learning. The biennial offering of the institute builds rapport among the physiology educator participants and provides regular training and communication opportunities to them. In addition, various reunion events for PECOP members (at Experimental Biology, National Science Teachers Association,

National Association of Biology Teachers) or regional events (APS chapter meetings or meetings of the Human Anatomy and Physiology Society) have been planned and implemented. In fact, collaborations for publications and shared grant proposals have grown out of the ITL participants, and there is increased enthusiasm for the programming of the Teaching Section at the Experimental Biology meetings. Institute participants are strongly encouraged to collaborate with each other and to publish their ideas and research in *Advances in Physiology Education* and online at the Life Science Teaching Resource Community (LSTRC). The LSTRC has also hosted a PECOP blog and discussion site since November 2014 on various educational topics that is organized by Barb Goodman and features totally guest bloggers from the physiology educator community (<http://blog.lifescitrc.org/pecop/>).

In conclusion, the APS Teaching Section's Institutes on Teaching and Learning have a growing number of participants who are very enthusiastic about being able to highlight and learn about evidence-based teaching for strengthening their contributions to the teaching leg of the three-legged stool of the teaching, research, and service requirements for academic promotion and tenure. The institute has assisted in starting new friendships, consultations, and collaboration among physiology educators. The Physiology Educator Community of Practice participants are becoming a fun group of colleagues.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the author.

AUTHOR CONTRIBUTIONS

B.E.G. conceived and designed research; drafted manuscript; edited and revised manuscript; approved final version of manuscript.

REFERENCES

1. **Doyle T, Zakrajsek T.** *The New Science of Learning: How to Learn in Harmony with Your Brain.* Sterling, VA: Stylus, 2013.
2. **Goodman BE, Matyas ML.** What is the American Physiological Society's ITL and who are the members of PECOP? *Adv Physiol Educ* 40: 239–242, 2016. doi:10.1152/advan.00045.2016.
3. **Haist SA, Butler AP, Paniagua MA.** Testing and evaluation: the present and future of the assessment of medical professionals. *Adv Physiol Educ* 41: 149–153, 2017. doi:10.1152/advan.00001.2017.
4. **Kibble JD, Bellew C, Asmar A, Barkley L.** Team-based learning in large enrollment classes. *Adv Physiol Educ* 40: 435–442, 2016. doi:10.1152/advan.00095.2016.
5. **Kober N.** *Reaching Students: What Research Says about Effective Instruction in Undergraduate Science and Engineering.* Washington, DC: National Academies Press, 2015. doi:10.17226/18687.
6. **Malcom S, Feder M (Editors).** *Barriers and Opportunities for 2-Year and 4-Year STEM Degrees.* Washington, DC: National Academies Press, 2016. doi:10.17226/21739.
7. **Matyas ML.** Lurk or lead? The benefits of community participation. *Adv Physiol Educ* 41: 145–148, 2017. doi:10.1152/advan.00200.2016.
8. **McFarland J, Pape-Lindstrom P.** The pipeline of physiology courses in community colleges: to university, medical school, and beyond. *Adv Physiol Educ* 40: 473–476, 2016. doi:10.1152/advan.00141.2016.

