2019 Institute for
New Faculty Developers
at UNC Greensboro

Session: Working with STEM Faculty
Tuesday, July 30, 2:00 – 2:45 pm

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Slides available in Google Drive: https://tinyurl.com/INFD2019-Horii or click here.

1. Opening Reflection

   By yourself (2 minutes): Write about your thoughts in response to these questions:

   a. What is science?

   b. What makes science different from other subjects/disciplines?

   c. What makes teaching science different from teaching other subjects/disciplines?

   In pairs (2 minutes): Compare your responses. How are they similar or different?

   All together: Debrief/discussion

Questions a. and b. adapted from the Views of Nature of Science (VNOS) Questionnaire, Lederman et al. 2002

2. Working with STEM Faculty – Special / Not Special

STEM Disciplines Are Special	STEM Disciplines Are Not Special

3. Techniques for Working with STEM Faculty

   - Using STEM Examples in the Backward Design Process (and Elsewhere)

   - Working with Departments as Units of Change

   - Building on / Leveraging Disciplinary and STEM-specific Experiences

   - Reflecting on Your Relationship with STEM Disciplines

References and Resources:

STEM Online Resources and Major Publications:

- All STEM:
  - Barriers and Opportunities for 2-Year and 4-Year STEM Degrees: Systemic Change to Support Students' Diverse Pathways. National Academies. 2016.
  - Reaching Students: What Research Says About Effective Instruction in Undergraduate Science and Engineering. National Academies. 2015.
  - Framework for Systematic Change in Undergraduate STEM Teaching and Learning. Association for American Universities.
- BIOLOGICAL SCIENCES:
  - www.coursesource.org. Open-access journal of peer-reviewed teaching resources for undergraduate biological sciences.
  - https://www.lifescied.org/. CBE-Life Sciences Education, a free, online quarterly journal published by the American Society for Cell Biology (ASCB)
- ENGINEERING & TECHNOLOGY:
  - csteachingtips.org/. A project documenting and disseminating effective computer science teaching practices.
  - https://advances.asee.org/. Advances in Engineering Education: A Journal of Engineering Education Applications.
- GEOSCIENCES + All STEM:
  - serc.carleton.edu. The Science Education Resource Center (SERC) at Carleton College is another extensive collection of evidence-based teaching resources. This collection started with the Geosciences but has expanded to other areas.
- MATHEMATICS:
  - www.maa.org/node/789682/. The Mathematical Association of America's *Guide to Evidence-Based Instructional Practice* has helpful resources and the other pages contain additional mathematics-specific resources.
- PHYSICS:
  - www.physport.org. Supporting physics teaching with research-based resources." This highly searchable database consolidates teaching approaches, assessment tools, and other recommendations, with quick summaries of evidence for each.

Disciplinary Teaching-focused Institutes and Workshops for STEM Faculty:

- All STEM:
  - www.summerinstitutes.org/. Summer Institutes on Scientific Teaching. 5-day workshops designed to empower and inspire college and university instructors to transform STEM education through evidence-based teaching practices.
- BIOLOGY:
  - sdbonline.org/boot_camp. The Society for Developmental Biology Boot Camp is designed for pre-tenure faculty and advanced postdoctoral fellows about to enter their first academic position.
- CHEMISTRY:
  - www.acs.org/content/acs/en/education/educators/coursesworkshops/csc-new-faculty-workshop.html. The New Faculty Workshops focus on sharing and developing essential skills that faculty need to successfully navigate the early years of their research and teaching careers
- ENGINEERING:
  - www.asee.org/education-careers/continuing-education/courses-and-workshops/neti. National Effective Teaching Institutes are three-day workshops offered twice per year from the American Society for Engineering Education (ASEE).
- GEOSCIENCES:
  - https://serc.carleton.edu/teachearth/events.html. NAGT sponsors a variety of events focused on early and later-career faculty.
- MATHEMATICS:
  - www.maa.org/programs-and-communities/professional-development/project-next. Project NExT (New Experiences in Teaching) is a professional development program for early career faculty in the mathematical sciences
- PHYSICS:
  - http://www.aapt.org/Conferences/newfaculty/nfw.cfm. The Physics and Astronomy New Faculty Workshop is held twice annually and reaches ~40% of all new tenure-track hires in the US in these fields each year.

Additional References:

- Specific articles referenced in the session will be linked in the online version of the Google slides, available at: https://tinyurl.com/INFD2019-Horii.