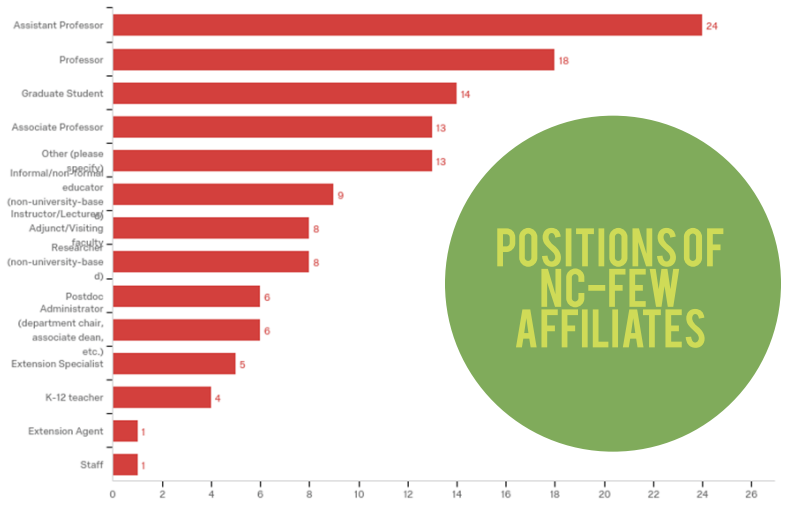
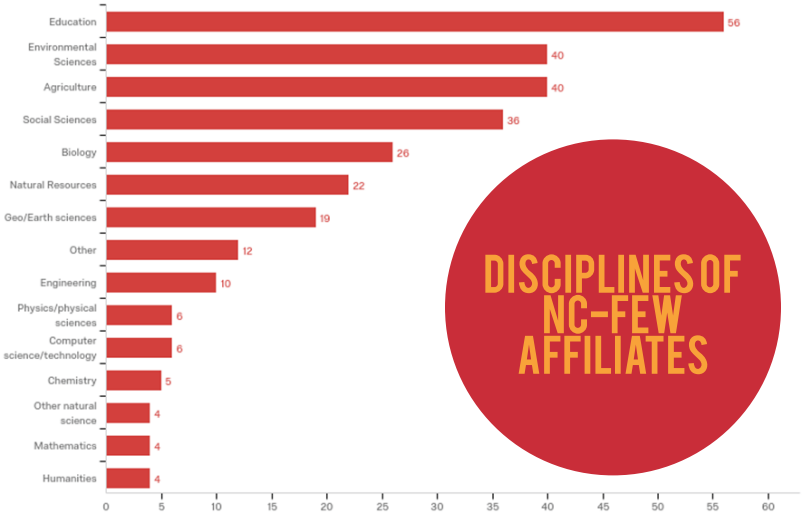
Winter, 2019

National Collaborative for Research on Food, Energy, & Water Education (NC-FEW)

NC-FEW MEMBERSHIP GROWTH

Over the past 5 months, the NC-FEW Leadership Team has been hard at work disseminating information about NC-FEW. An official call for participation was released in September 2019, via email to an array of professional communities. Members of the Leadership Team also engaged with prospective participants through presentations and sessions at annual meetings of the Geological Society of America (GSA) and Association of Science Teacher Education (ASTE). Through these dissemination and recruitment efforts, over 100 individuals from the U.S. and abroad have thus far joined NC-FEW as community affiliates. These include postsecondary faculty from diverse disciplinary backgrounds, as well as informal/nonformal educators, postdoctoral researchers, graduate students, and K-12 educators. As interest in NC-FEW continues to grow, recruitment efforts will ongoing. Be on the lookout for NC-FEW at upcoming events this spring!



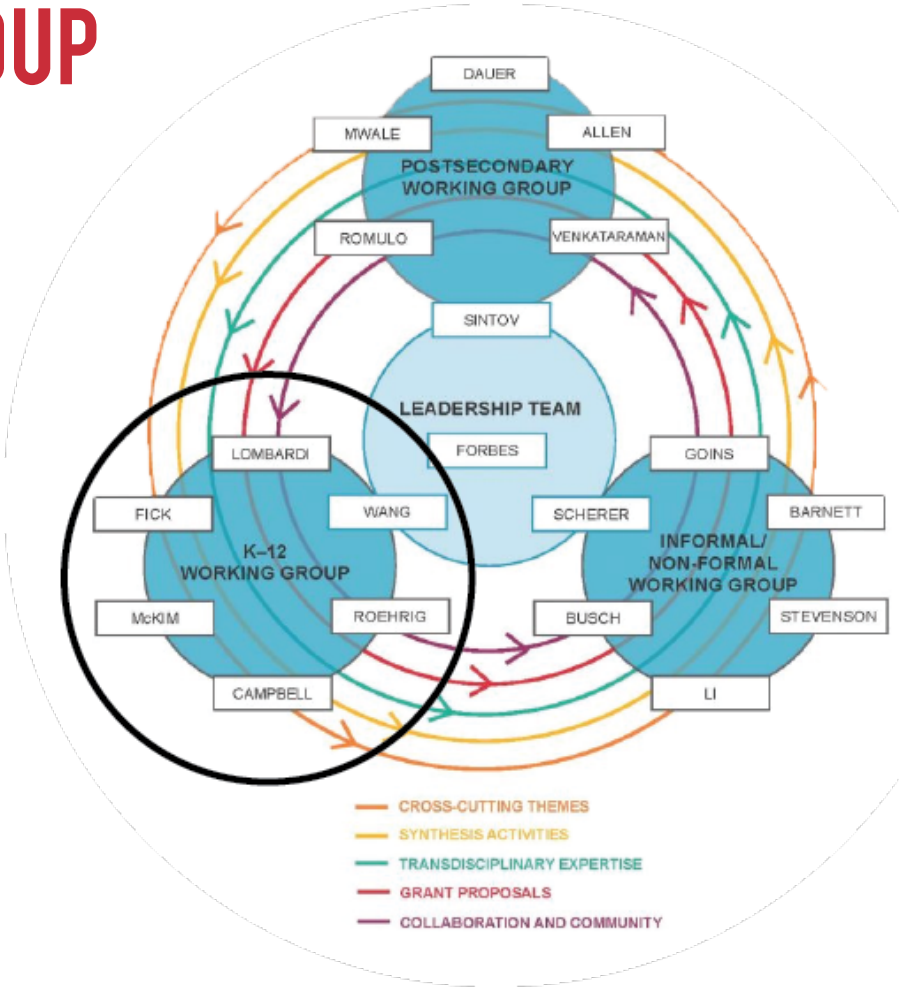


WEBINARS

The first community webinar was held on Friday, December 13. During the webinar, the Leadership Team provided an overview of NC-FEW, including planned activities and ways for NC-FEW Affiliates to engage with the community, followed by an open Q&A session. **Please be sure to join us for the next webinar, scheduled for Friday, April 3 at 2:30 CST**, which will focus on the three NC-FEW working groups and their contributions to advancing community endeavors.

K–12 WORKING GROUP

OVERVIEW AND GOALS



The goal of the K-12 education group is to foreground the FEW-Nexus as central to scientific literacy for K-12 learners that is supportive of a sustainable future and necessary for responsible citizenship. This will be accomplished through an ongoing iterative process whereby the K-12 working group theoretically frames what it means for K-12 learners to be scientifically literate in relation to the FEW-Nexus, examines and refines how FEW-Nexus scientific literacy can be embodied in performances of K-12 learners, and identifies or develops resources (e.g., curriculum, instructional routines) that can support teachers in engaging and supporting K-12 learners in these performances.

This focus is important since sustainability of food, energy, and water resources is a 21st Century Grand Challenge (NRC, 2009, p.4). More specifically, addressing complex FEW-Nexus challenges requires interdisciplinary knowledge and skills and involves design tradeoffs to make solutions productive and efficient while also being economical, cost-effective, environmentally sustainable, socially responsible, and acceptable to consumers. Therefore, complex FEW-Nexus problems provide an important context for supporting K-12 students in learning about and applying disciplinary ideas and practices in authentic pursuits of proposing solutions to problems. To begin this work, the K-12 working group will use a variety of national standards, including the *Next Generation Science Standards*, to consider how the FEW-Nexus is reflected in the various standards documents and supported in K-12 classrooms. The group will also examine what is needed at various levels of the education system in order to work toward sustainable changes in approaches to supporting student learning, seeking to design and refine pedagogical supports for K-12 teachers. The K-12 group's early interests lie in using FEW issues in collaboration with K-12 educators through identifying and developing curriculum and pedagogical resources supportive of (1) emerging FEW learning progressions or FEW phenomenon progressions, (2) system thinking in the context of FEW-Nexus challenges, and (3) using evidence to support students in drawing conclusions about the relationships within the FEW-Nexus.

"THE K–12 WORKING GROUP WILL EXAMINE EXISTING DISCIPLINARY STANDARDS FOR TEACHING AND LEARNING TO IDENTIFY AND MAP THEIR CONNECTIONS TO FEW-NEXUS TOPICS"

K-12 WORKING GROUP

MEET THE TEAM

TODD CAMPBELL

Chair of the Department of Curriculum and Instruction and a Professor of Science Education, University of Connecticut

Todd Campbell 's research focuses on investigating and designing equitable science learning environments in partnerships with pre-service and in-service science teachers, science teacher leaders, district leaders, and scientists. He is an affiliated faculty member with the Center for Land Use Education and Research (CLEAR) at UConn where he collaborates on equity and social justice focused community land-use research including supporting teachers in professional development anchored in model-based educative watershed curriculum. He is engaged in the NC-FEW because of his desire to support science learners productive engagement in STEM disciplinary activity that is focused on environmental stewardship.

SARAH FICK

Research Assistant Professor of Science Education, University of Virginia

Sarah Fick conducts research describing how students coordinate disciplinary core ideas, practices, and crosscutting concepts in science sensemaking, with a particular focus on using supports and scaffolding to make the implicit aspects of this work more explicit and available to students and teachers. Her work is situated in formal learning contexts and generally includes a strong focus on examining and mitigating human impacts on the environment. Her most recent projects have focused on the cycling of water on and through the Earth's surface at different scales and grade levels. Sarah is excited to be a part of the NC-FEW team because of the opportunity to think collaboratively with a group of researchers about how education in K-12 learning environments can support tackling these sustainability challenges.

GILLIAN ROEHRIG

Professor of STEM Education at the University of Minnesota

Gillian Roehrig 's research explores issues of professional development for K-12 science teachers, with a focus on beginning teachers and implementation of integrated STEM learning environments. She has received over $30 million in federal and state grants and published over 90 peer-reviewed journal articles and book chapters. She is a former board member of the National Association of Research in Science Teaching and past president of the Association for Science Teacher Education. Gillian is excited to be part of the FEW team to help enhance teachers understanding of multi-disciplinary approaches to teaching science and engage students in real-world problems that motivate interest in pursuing STEM

DOUG LOMBARDI

Associate Professor, Department of Human Development and Quantitative Methodology, University of Maryland

As the head of the Science Learning Research Group (http://sciencelearning.net), Doug Lombardi conducts research examining reasoning and critical thinking about knowledge claims. Much of this research is situated within the context of formal classroom settings and focuses on effective teaching tools and strategies to support deep learning, particularly about scientific topics that pose local, regional, and global challenges (e.g., causes of current climate change, availability of freshwater resources). Doug is excited to be a part of NC-FEW community because he is extremely interested in participating in and contributing to the collaborative's multi-disciplinary cross-fertilization network.

AARON MCKIM

Assistant Professor in the Department of Community Sustainability at Michigan State University

Aaron's research focuses on the facilitation of interdisciplinary learning spaces within the context of agriculture, food, and natural resources (AFNR) education. In this work, Aaron explores the role educators play in making connections between AFNR and science, mathematics, leadership, and engineering. This work is compelled by the critical need to prepare individuals to think outside traditional disciplinary boundaries to solve complex problems within the food-energy-water nexus. Aaron is excited to be a member of the NC-FEW team and hopes his work will positively contribute to AFNR education nationwide.

FUNDING OPPORTUNITIES

USDA-NIFA Higher Education Challenge (HEC) Grants Program

Submission Deadline: Monday, March 23, 2020

Supports projects that will address a postsecondary (undergraduate and masters-level) needs in food, agriculture, natural resources, and human sciences (FANH).Focus on enhancing educational programming and increasing number and diversity of students in FANH degree programs.

NSF Scholarships in Science, Technology, Engineering, and Mathematics Program (S-STEM)

Submission Deadline: March 25, 2020

Seeks to 1) increase the # of low-income academically talented students with demonstrated financial need obtaining degrees in S-STEM eligible disciplines and entering the workforce or graduate programs in STEM; 2) improve the education of future scientists, engineers, and technicians, with a focus on low-income academically talented students with demonstrated financial need; and 3) generate knowledge to advance understanding of how interventions or evidence-based curricular and co-curricular activities affect the success, retention, transfer, academic/career pathways, and graduation of low-income students in STEM.

NSF INCLUDES Planning Grants

Submission Deadline: July 13, 2020

Supports projects that build capacity for the development of collaborative infrastructure to: (a) facilitate innovative partnerships, networks, and theories of action for broadening participation in STEM at scale and (b) lead to the establishment of future centers, alliances, or other large-scale networks to address a related challenge.

Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

Submission Deadline: August 4, 2020

Supports novel, creative, and transformative approaches to generating and using new knowledge about STEM teaching and learning to improve STEM education for undergraduate students. 8/4 deadline for *Engaged Student Learning* (Level 1) and *Institutional and Community Transformation* (Capacity-Building and Level 1) tracks.

Research Experiences for Undergraduates (REU) NSF Wide Programs

Submission Deadline:August 26, 2020

The REU program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. Proposals can be submitted as stand-alone projects or supplements.

NEWS & EVENTS

Friday, April 3, 2020

NC-FEW Webinar

2:30 CST

April 6-10, 2020

Annual meeting of the American Association of Geographers (AAG)

Education Research in the Food-Energy-Water-Nexus: Building Capacity through Transdisciplinary Networked Improvement Communities

Session co-sponsored by NC-FEW and the National Center for Research in Geography Education (NCRGE)

GET INVOLVED!

Do you study or evaluate FEW-Nexus-focused educational programs in K-12, postsecondary, and/or informal/nonformal settings? If so, consider joining us!

There is no cost to you and NC-FEW participation affords you access to community activities, including travel support to invited meetings, webinars and NC-FEW communications, and designation as an NC-FEW Affiliate.

http://ncfew.org/get-involved/