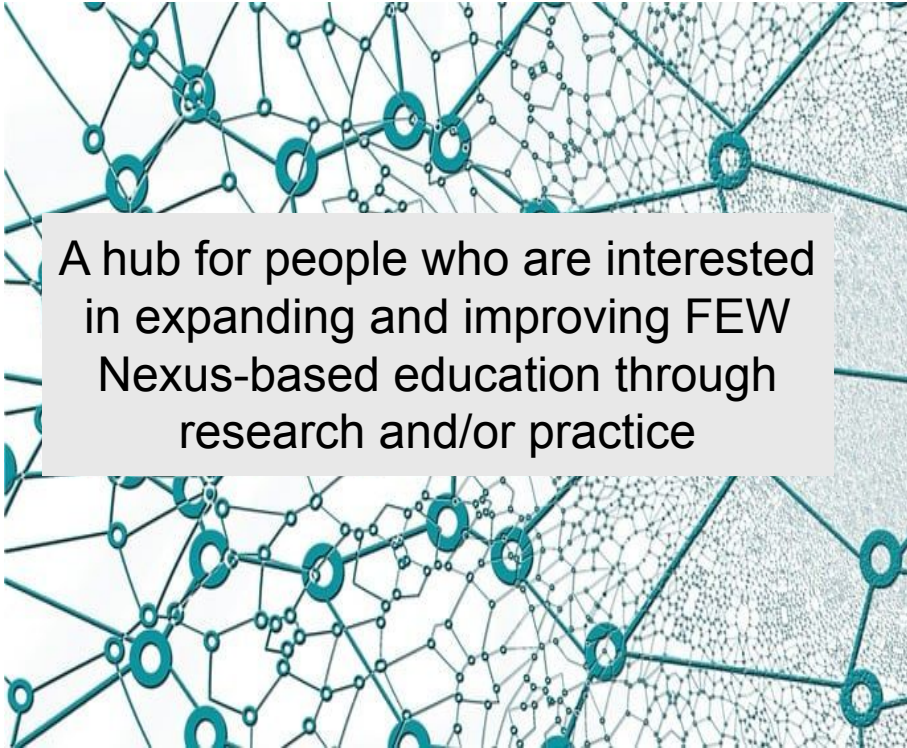


NC-FEW 2.0
Curriculum
Convening
Oct 02, 2026



ADVANCING FEW-
NEXUS EDUCATION
AS A FIELD:
*DEVELOPING A
SHARED
BLUEPRINT FOR
CURRICULUM AND
ASSESSMENT*

NC-FEW: National Collaborative for Research on Food, Energy, and Water Education



A hub for people who are interested in expanding and improving FEW Nexus-based education through research and/or practice



2YC -> graduate
postsecondary
settings

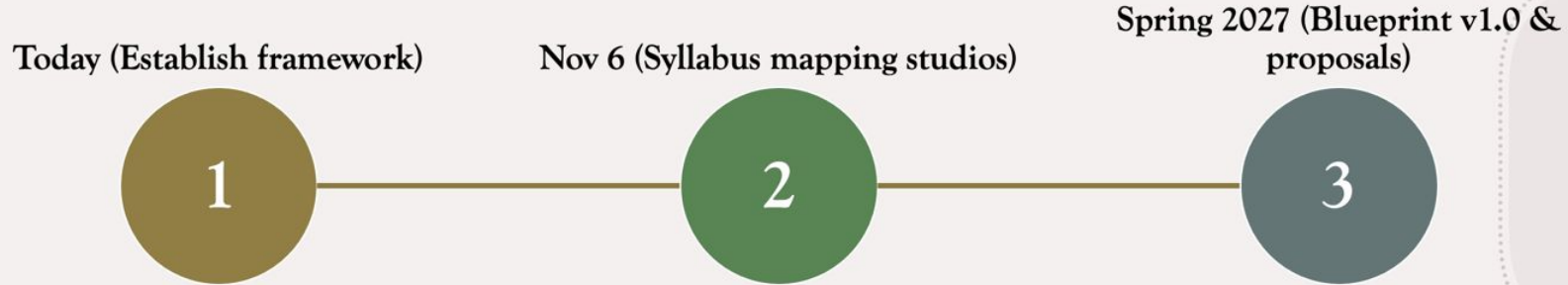


PK-12 teacher
education &
student learning
in formal
classroom
settings



Informal/non-formal/public
settings

Our Year-Long Roadmap.



Breakout Room Topics:

- Participants attend two of the four rooms.
- All rooms explore the same driving question

What is the starting point for teaching the FEW Nexus through this lens, and why?

1. Room A: Skills Engagement and Workforce Pathways- *Nirav Patel*
2. Room B: Just Transitions, Equity, Circularity, and Materials- *Bhawani Venkataraman & Sonya Ahamed*
3. Room C: Engaging Non-Majors and Two-Year Colleges- *Brian Shmaefsky*
4. Room D: K-12 to Higher Ed Continuity- *Hui-Hui Wang*



NC-FEW 2.0 Steering Committee

- Dr. Nirav Patel
Assistant Teaching Professor, University of Colorado, Boulder
- Dr. Brian Shmaefsky
Professor of biology at Lone Star College
- Dr. Hannah Scherer
Associate Professor and Extension Specialist Teaching and Learning, Virginia Tech
- Dr. Doug Lombardi
Professor and Associate Dean for Faculty Affairs & Graduate Studies, University of Maryland, College of Education
- Dr. Sonya Ahamed
School for International Training and University of Vermont
- Dr. Bhawani Venkataraman
Associate Professor of Chemistry; Vice-President for Climate and Environmental Justice, Eugene Lang College of Liberal Arts
- Dr. Hui-Hui Wang
Associate Professor of Agriculture Education, Curriculum and Instruction, Purdue University

With appreciation for their guidance, leadership, and contributions.

Meet the Plenary Speakers



Doug Lombardi

- University of Maryland, College Park
- Professor & Associate Dean
- Learning Sciences | Scientific Thinking | Science Learning

Plenary Focus

An Integrated Framework for FEW-Nexus Education

Based on nine workshops with educators across disciplines



Hannah H. Scherer

- Virginia Tech
- Associate Professor & Extension Specialist
- Systems Thinking | FEW-Nexus Education | Interdisciplinary Learning



Exploring the foundations of FEW Nexus education through interdisciplinary educator perspectives

Hannah Scherer, Virginia Tech

Doug Lombardi, University of Maryland College Park

(Scherer & Lombardi, 2026)

This material is based upon work supported by the National Science Foundation under [Grant No. 1856040](#) and [2242276](#) (ECR-EHR Core Research), National Institute of Food and Agriculture, U.S. Department of Agriculture, under award #1006539 and #2017-06281, and the [Network of STEM Education Centers/APLU](#). 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 these funding agencies.

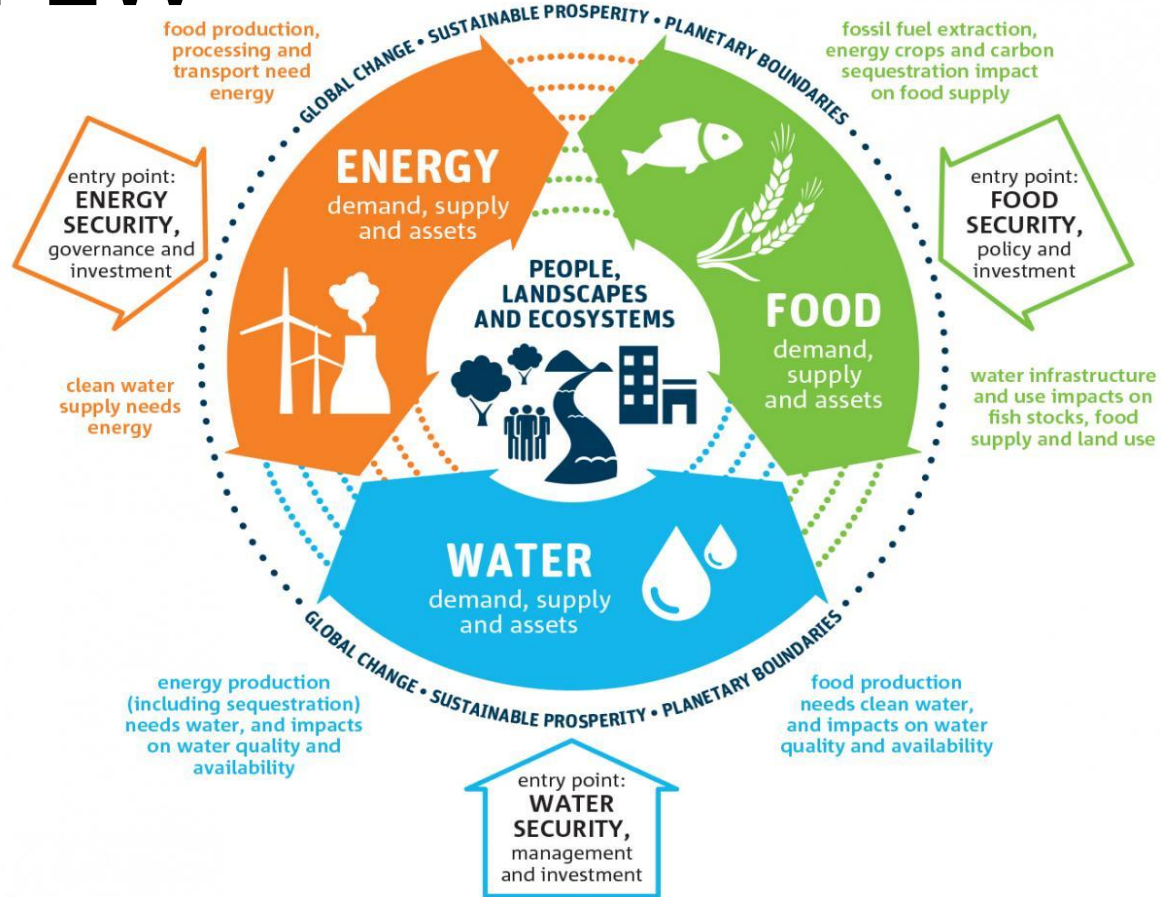


What is the FEW Nexus?

A framework for interconnected resources essential for well-being

and

A powerful topic for teaching and learning that supports **socio-ecological systems thinking** and decision making



Previous work in framing the FEW Nexus

- ✓ Principles for defining the FEW Nexus for science and practice (Anandhi et al., 2023)
- ✓ NC-FEW members' ideas about the FEW-Nexus perspective (Tabassum et al., 2025)
- ✓ NC-FEW community vision for FEW-Nexus-based education (Scherer et al., 2022)
- ✓ K-12 standards-aligned STEM teaching tool (Campbell et al., 2024)
- ✓ Framework and examples for using the FEW Nexus to implement post-secondary interdisciplinary sustainability education (Romulo et al., 2024)

Objectives of the study

From the perspective of practitioners,

1. Define and describe the FEW-Nexus
2. Define and describe FEW-Nexus-based education
3. Identify and describe challenges with FEW-Nexus-based education

Context for this study: Workshop Series

We prompted participants to consider the role of education and educational research in addressing FEW sustainability and security by considering...

1. how the FEW Nexus relates to their specific contexts
2. the challenges to teaching and learning about the FEW Nexus in their domains and situations
3. suggestions for addressing these challenges through education research and practice



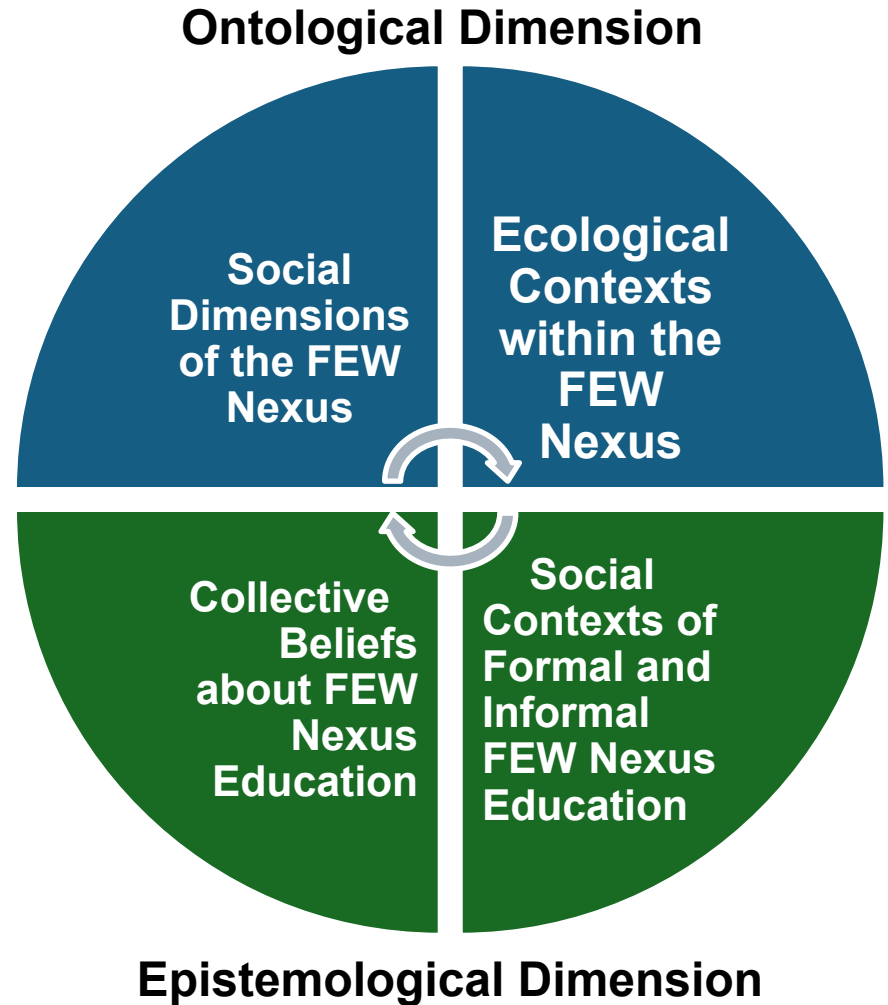
Context for the study: Workshop Series

- NC-FEW Virtual Workshop (open to all)
- **AAG**: American Association of Geographers
- **IASNR**: International Association for Society and Natural Resources
- **SWCS**: Soil and Water Conservation Society
- **NACTA**: North American Colleges & Teachers of Agriculture
- **GSA**: Geological Society of America
- **AESS**: Association of Environmental Studies & Sciences
- **EER**: Earth Educators' Rendezvous
- **NAAEE**: North American Association for Environmental Education

Foundations of a New Framework

Ontological dimension = how participants conceptualized the ***FEW-Nexus as a socio-ecological system***

Epistemological dimension = how participants described ***education about the FEW-Nexus***



Ontological dimension

Thoughts about the socio-ecological systems aspects of the nexus

Crosscutting Theme

- Scale, Complexity, and Systems

Ecological Contexts Theme

- Processes and Consequences

Ontological dimension

Thoughts about the socio-ecological systems aspects of the nexus

Social Dimensions Themes

- Critical Social Science and Ontological Reframing
- **Power, Inclusion, and Justice**
- **Equity of Access and Interdependence**
- Governance, Policy, and Decision-Making

Epistemological dimension

Collective Beliefs about FEW-Nexus-based Education

Cognitive and affective outcomes themes

- Systems Thinking as a Core Educational Aim
- Cognitive and Social Construction of Knowledge
- Student and Instructor Identity and Agency Development

Epistemological dimension

Collective Beliefs about FEW-Nexus-based Education

Purpose of FEW-Nexus-based education themes

- Civic and Societal Relevance of Education
- **Relevance of FEW to Curriculum and Student Futures**

Epistemological dimension

Collective Beliefs about FEW-Nexus-based Education

Implementation of FEW-Nexus-based education themes

- **Interdisciplinary Collaboration and Integration**
- Experiential and Place-Based Learning
- Inclusive and Equity-Oriented Pedagogy

Epistemological dimension

Social Contexts of Formal & Informal FEW-Nexus Education

Variability and evolving nature of FEW-Nexus-based education themes

- Community Defining the Concept of FEW for Education
- **Student Diversity in FEW Nexus Education**
- Expertise and Educator Knowledge of the FEW Nexus

Epistemological dimension

Social Contexts of Formal & Informal FEW-Nexus Education

Organization and enactment of FEW-Nexus-based education themes

- **Curricular Structures and Educational Contexts to Implement FEW Nexus Education**
- External Connections and Considerations

Epistemological dimension

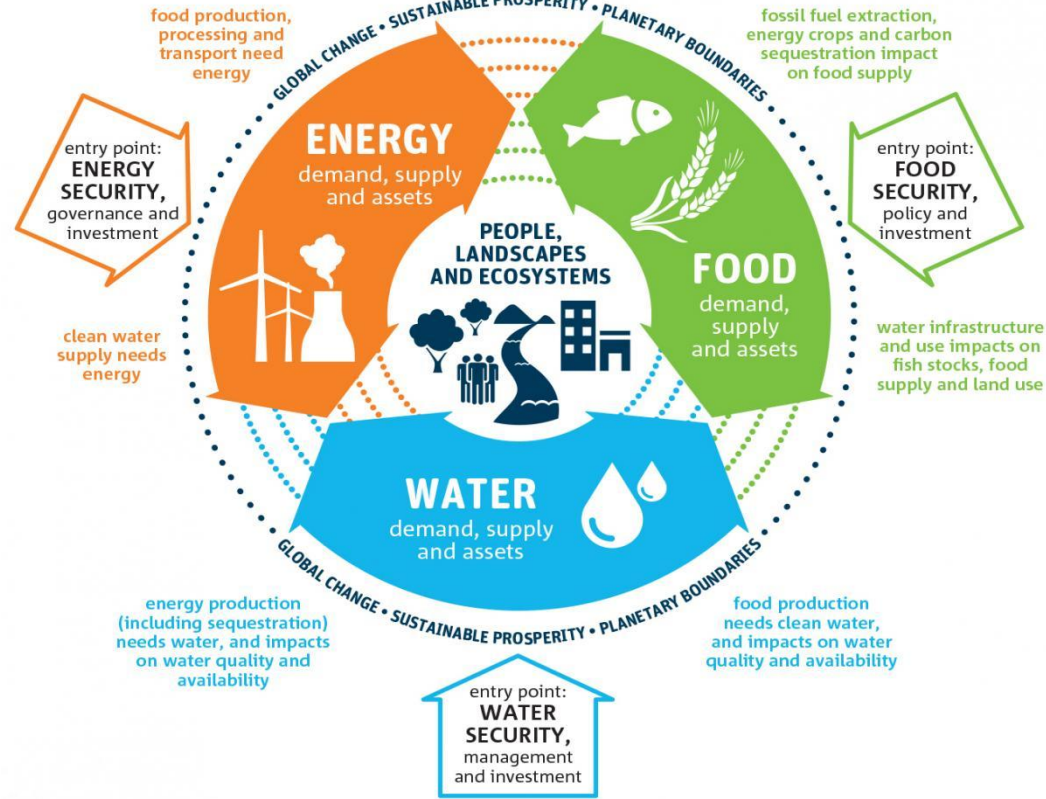
Social Contexts of Formal & Informal FEW-Nexus Education

Need for implementation of FEW-Nexus-based education themes

- **Educator Support is Needed to Implement FEW Nexus Education**
- Tools for Teaching with the FEW Nexus are Desired
- Human and Financial Resources

How can the FEW-Nexus advance education that contributes to change and disruption, moving local, regional, and global socio-ecological systems toward sustainability and security?

Keep this question in mind as we transition to Q&A and our 4 Breakout Rooms



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