FIE F2B: Special Session
STEM Faculty Development Research Agenda

Karen High & Shannon Stefl
Engineering & Science Education, Clemson University
Contact: stemfacdev@clemson.edu
**Meaning:** symbolizes holistic STEM FD, with the four areas of teaching, research, service, and leadership coming together and the arrows point outwards to show growth
How Many Hats Do You Wear:
Building Research Capacity for STEM Faculty Development Workshop

February 17–18, 2017
Clemson University
Research & Workshop Team

Karen High
Cindy Lee
Sandy Linder
Shannon Stefl
Faiza Jamil
Cindy Roper
Dennis Lee
Kimbell Dobbins
Teri Garrett
The STEM Faculty Development Collaboratory (SFDC)

- The STEM Faculty Development Collaboratory (SFDC) at Clemson University was established in 2015 to provide transformative research and service in the holistic areas of teaching, research, service, and leadership.

- The SFDC focuses on transformative research and service to advance holistic faculty development focused on the STEM disciplines.

  - Please fill out the Affiliate Recruitment cards if you are interested in joining the collaboratory or contributing to the further development of the research agenda.
Workshop Participant’s Areas of Expertise

- Chemistry
- Computer and Information...
- Engineering
- Geosciences
- Life Sciences
- Materials Research
- Mathematical Sciences
- Physics and Astronomy
- Psychology
- Social Sciences
- STEM Education and Learning...
- Other (please specify)
STEM Faculty Development Workshop Discussion Threads

Thread 1
Inputs
• Motivation & Engagement
• Expectations & Policies
• Context & Characteristics

Thread 2
Processes
• Mechanisms & Models
• Implementation Fidelity
• Data Usage

Thread 3
Outcomes
• Faculty Identity
• Metrics & Productivity
• Cultural Norms
Slack.com Pre-workshop Engagement

Development of national research agenda during workshop

Create
Day 1
Individuals and groups create sticky notes of reflections & ideas

Organize
Day 1
Individuals and groups organize sticky notes into 3 workshop threads boards

Analyze
Day 2
Groups analyze boards to identify common themes and distinct voices

Relate
Day 2
Groups build concept map to relate themes. This becomes the first step of research agenda

Thread 3
Thread 2
Thread 1

Concept Map

Current State of the Research Agenda

outcomes

Category 1

Category 2

Category 3

Category 4
Identified **seven overarching outcomes** for research in Holistic STEM FD.

(1) Metrics/Instrument Development for STEM FD  
(2) Impact on Students,  
(3) Generalizable Models of Holistic STEM FD  
(4) Impact on Faculty  
(5) Equity  
(6) Cultural and Community Context, and  
(7) Institutional Policy and Context

To move the needle on these outcomes, we identified **four potential categories of research** that make up an emergent agenda of research for holistic STEM FD.

<table>
<thead>
<tr>
<th>Category</th>
<th>Themes</th>
</tr>
</thead>
</table>
| 1. Cultural and Contextual considerations | • Importance of Context  
• Institutional Value  
• External Forces  
• Who’s Responsible  
• Addressing bias |
| 2. Processes of Conducting STEM FD | • Delivery  
• Innovation |
| 3. Assessment of Models | • Formative Assessment (Micro- inform the model/feasibility)  
• Summative Assessment (Meso- results of the model)  
• Systematic Assessment (Macro/Global- overall change/sustainability)  
• Implementing Assessment |
| 4. Who Are the Learners? | • Self-Regulatory Development  
• Motivation  
• Identity  
• Student Outcomes  
• Aligning Personal and Institutional Goals  
• Aligning Goals Across Academia |
Learning more about the research agenda and SFDC

- Research Agenda & SFDC Website: [www.clemson.edu/ese/stemfacdev](http://www.clemson.edu/ese/stemfacdev)
  - Key items available:
    - Workshop info, ASEE paper, NARST paper, FIE paper, SFDC collaboratory members contact info, draft of agenda
- Email contact: stemfacdev@clemson.edu