15-16 Oct. 2026
Washington, DC

COUNCIL OF GRADUATE SCHOOLS

NSF

Advancing Innovations in Graduate Education:

IGE Principal Investigators' Meeting







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Agenda at-a-Glance

Day 1: Thursday, October 15

1:00–1:30 p.m.	Welcome and Meeting Overview
1:30–2:30 p.m.	Opening Keynote
2:30–2:45 p.m.	Setting Our Learning Agenda
2:45–3:45 p.m.	Innovative Solutions to Persistent Challenges
3:45–4:00 p.m.	Transition to Breakout Rooms
4:00–4:45 p.m.	Challenge Labs in Breakout Rooms
4:45–5:30 p.m.	Hotel Check-In and Break
5:30–7:00 p.m.	Poster Session and Networking Reception

Day 2: Friday, October 16

8:00–9:00 a.m.	Networking Breakfast
9:00–9:15 a.m.	Welcome and Charge for the Day
9:15–10:30 a.m.	Career Preparation and Student Success Pilots
10:30–10:45 a.m.	Coffee Break
10:45–11:40 a.m.	Case Studies on Sustainability and Scaling in Breakout Rooms
11:45 a.m.–12:15 p.m.	Cross-Pollination and Synthesis Session
12:15–1:15 p.m.	Networking Lunch
1:15–2:15 p.m.	Systemic Interventions and Policies
2:15–2:45 p.m.	Recommendations for the STEM Education Community
2:45–3:00 p.m.	Concluding Remarks and Next Steps

About the

IGE Hub



IGE Hub
Innovations in Graduate Education

Goals of the **IGE Hub**

01 Foster learning and collaboration among IGE awardees and provide broader dissemination of information and opportunities across the STEM graduate community.

02 Support a network where IGE teams can learn about broader themes, challenges, and innovations in STEM graduate education.

03 Help IGE grantees overcome challenges that hinder broader adoption of their innovations.

04 Share innovations across grantee institutions and with the STEM graduate community.

About **CGS**

For six decades, the Council of Graduate Schools (CGS) has been the national voice for the graduate dean community. CGS is the only national organization in the United States that is dedicated solely to the advancement of graduate education and research.

CGS accomplishes its mission through advocacy in the policy arena, innovative research, and the development and dissemination of best practices. CGS also acts as a convening authority, organizing major events that bring together graduate deans and other stakeholders to discuss and take action on a broad range of issues affecting graduate education today.

Meeting Goals and Policies

Code of **Conduct**

Adapted from the in-person conduct policy of the Societies Consortium on Sexual Harassment in STEM:

01 **Demonstrate respect and consideration for all people.**

02 **Make room for a diversity of voices** in group discussions.

03 **Demonstrate that differing perspectives are valued—**critique ideas, not people.

04 **Be aware of and do not enter others' personal space.**

05 **Report conduct concerns to a CGS staff member** so that concerns can be addressed as quickly as possible.

CGS strives to host inclusive, accessible events that enable all individuals, including individuals with disabilities, to engage fully. Please contact Matt Linton (mlinton@cgs.nche.edu) or any member of the CGS staff if you need additional support to participate.

Meeting **Objectives**

01 Support awareness and learning about broader themes, challenges and innovations in STEM graduate education.

02 Provide a forum where IGE grantees can discuss both challenges and evidence-based practices with their colleagues.

03 Promote broader dissemination of IGE innovations to the STEM graduate education community.

By the **Numbers**

46 Attendees
Including IGE project teams, NSF representatives, and disciplinary society partners

21
Posters

32
Current IGE Projects Represented

Keynote Speaker



Kimberly A. Griffin
Dean of the College of Education
University of Maryland

Kimberly A. Griffin became dean of the College of Education in 2022. She previously served as associate dean for graduate studies and faculty affairs and as a professor in the Higher Education, Student Affairs and International Education Policy Program. Prior to joining UMD, she was a faculty member at Pennsylvania State University, an assistant dean for graduate studies at the Stanford University School of Medicine, and an admissions officer at Stanford University.

Griffin's scholarship has been widely recognized for its relevance and effectiveness in addressing persistent problems in higher and science education. She received the Promising Scholar/Early Career Award by the Association for the Study of Higher Education in 2013, and was named an Emerging Scholar in 2010 and Diamond Honoree in 2020 by ACPA. For the past five years, she has been named one of the 200 most influential education scholars by Education Week.

Griffin earned degrees from Stanford University, the University of Maryland, and the University of California, Los Angeles.

Agenda

October 15–16, 2026

The Darcy Hotel
Washington, DC

Advancing Innovations in Graduate Education: Innovations in Graduate Education (IGE) Principal Investigators' Meeting

Meeting Objectives:

- Support awareness and learning about broader themes, challenges and innovations in STEM graduate education.
- Provide a forum where IGE grantees can discuss both challenges and evidence-based practices with their colleagues.
- Promote broader dissemination of IGE innovations to the STEM graduate education community.

Day 1: Thursday, October 15

11:00 a.m.–1:00 p.m. — Arrival and Registration

Logan Ballroom Foyer

Collect Badge and Materials; Poster Set-Up

Please plan to arrive during the 11:00 a.m.–1:00 p.m. period to get settled at the hotel. Those traveling longer distances may need to arrive the day before. If an early check-in is not available, you may store your bags with the hotel staff.

1:00–1:30 p.m. — Welcome and Meeting Overview

Logan Ballroom

Dr. Chevelle Newsome, President, Council of Graduate Schools

Dr. Charisse Carney-Nunes, Deputy Directorate Head, Directorate of STEM Education (NSF EDU), National Science Foundation

Dr. Kathleen Ehm, Program Director, Directorate of STEM Education (EDU), National Science Foundation

1:30–2:30 p.m. — Opening Keynote

Logan Ballroom

Dr. Kimberly Griffin, Dean of the College of Education, University of Maryland

2:30–2:45 p.m. — Setting Our Learning Agenda

Logan Ballroom

Dr. Julia Kent, Vice President, Strategy and Program Innovation, CGS

Day 1: Thursday, October 15, continued

2:45–3:45 p.m. — *Logan Ballroom*

Innovative Solutions to Persistent Challenges

Focus: Research and insights from completed and well-advanced IGE projects; guidance on research and implementation challenges.

Dr. Lujie Karen Chen, Associate Professor, Department of Information Systems, University of Maryland, Baltimore County

Dr. Hua Li, Professor, Mechanical and Industrial Engineering, Texas A&M University–Kingsville

Dr. Angela Minichiello, Associate Professor, Engineering Education, Utah State University and Dr. Krishna Pakala, Associate Professor, Mechanical and Biomedical Engineering, Boise State University (co-presentation)

Moderator: **Dr. Kathleen Ehm**, Program Director, Directorate of STEM Education (EDU), National Science Foundation

3:45–4:00 p.m.

Transition to Breakout Rooms

4:00–4:45 p.m.

Challenge Labs in Breakout Rooms

Focus: Identifying challenges and solutions in IGE projects; identifying cross-cutting challenges and solutions across the IGE program.

Gaston

Breakout A

Facilitator: **Dr. Melissa F. Baird**, Program Director, Directorate of STEM Education (EDU), National Science Foundation

Whitman

Breakout B

Facilitator: **Dr. Julia Kent,** Vice President, Strategy and Program Innovation, CGS

Deacon

Breakout C

Facilitator: **Dr. Matthew Linton**, Senior Manager, Programs and Publications, CGS

4:45–5:30 p.m.

Hotel Check-In and Break

5:30–7:00 p.m.
Bader Ginsburg

Poster Session and Networking Reception

Poster presenters are assigned to one of two sessions within the networking period.

Session A (6:00-6:30 p.m.)

Session B (6:30-7:00 p.m.)

7:00 p.m.
Bader Ginsburg

Poster Hall Breakdown

Day 2: Friday, October 16

8:00–9:00 a.m.
Ellington

Networking Breakfast

9:00–9:15 a.m.
Logan Ballroom

Welcome and Charge for the Day

Dr. Julia Kent, Vice President, Strategy and Program Innovation, CGS

9:15–10:30 a.m.
Logan Ballroom

Career Preparation and Student Success Pilots

Focus: This session will bring together projects from *IGE Track 1: Career Preparation and Student Success Pilots.* These projects are designed to support innovations in graduate education within a single institution, focusing on workforce development that prepares the next generation of scientists and engineers for the full range of possible STEM career paths to advance the nation's STEM enterprise.

Dr. Eric Burkholder, C. Harry Knowles Endowed Professor for Research in Physical Sciences Instruction and Associate Professor of Physics, Auburn University

Dr. Elise Demeter, Director of Academic Research & Assessment, and Associate Graduate Faculty, University of North Carolina at Charlotte

Dr. Mark Moritz, Professor and Wicked Scientist, Department of Anthropology, The Ohio State University

Moderator: **Dr. Cynthia Fuhrmann**, Associate Professor, Biochemistry & Molecular Biotechnology, University of Massachusetts Chan Medical School and PI, Professional Development Hub (pd|hub)

Day 2: Friday, October 16, continued

10:30–10:45 a.m. — **Coffee Break**

Logan Ballroom Foyer

10:45–11:40 a.m. — **Case Studies on Sustainability and Scaling in Breakout Rooms**

Focus: Using IGE project cases to explore what it takes to sustain, adapt, and scale promising innovations.

Gaston

Breakout A

Case Study Presenter: **Dr. Amanda (Kelly) Lane**, Associate Professor, Department of Biology Teaching and Learning, University of Minnesota

Project: Comparing Rotations and Direct Admissions Pathways to Graduate Education in the Sciences: An Assessment of Policy and Practice

Facilitator: D**r. Matthew Linton**, Senior Manager, Programs and Publications, CGS

Whitman

Breakout B

Case Study Presenter: **Dr. Susan Fullerton Shirey,** Professor, Interim Chair of the Department of Chemical and Petroleum Engineering, University of Pittsburgh

Project: A Personalized Learning Model for STEM Graduate Education

Facilitator: **Dr. Melissa F. Baird,** Program Director, Directorate of STEM Education (EDU), National Science Foundation

Deacon

Breakout C

Case Study Presenter: **Dr. Russell Mailen,** Associate Professor, Aerospace Engineering, Auburn University

Project: The Writing SySTEM: A Systemic Approach to Graduate Writing Instruction and Intervention

Facilitator: **Dr. Julia Kent**, Vice President, Strategy and Program Innovation, CGS

11:45 a.m.–12:15 p.m. — **Cross-Pollination and Synthesis Session**

Logan Ballroom

Focus: Sharing of ideas generated in previous session; identification of lessons and themes across groups.

Facilitator: **Dr. Matthew Linton,** Senior Manager, Programs and Publications, CGS

Day 2: Friday, October 16, continued

12:15–1:15 p.m.
Ellington

Networking Lunch

Tables based on ideas proposed by participants at registration.

1:15–2:15 p.m.
Logan Ballroom

Systemic Interventions and Policies

Focus: This session will bring together IGE projects from *IGE Track 2: Systemic Interventions and Policies*, which are designed to generate knowledge about the graduate education system and outcomes of systemic interventions and policies. IGE Track 2 projects may be implemented at different scales: within a field of study across multiple institutions and programs; across multiple fields of study within a single institution; or across multiple institutions and fields of study.

Dr. Karen High, Professor, Department of Engineering & Science Education, Clemson University

Dr. Joanna Schiffman, Director, Outlier Research & Evaluation, Data Science Institute, University of Chicago

Dr. Harold Stanislaw, Professor, Department of Psychology, California State University, Stanislaus

Moderator: **Dr. Bonnie Ferri**, Vice Provost for Graduate and Postdoctoral Education, Georgia Tech

2:15–2:45 p.m.
Logan Ballroom

Recommendations for the STEM Education Community

Focus: Identification of recommendations for the STEM graduate education community.

Facilitator: **Dr. Julia Kent,** Vice President, Strategy and Program Innovation, CGS

2:45–3:00 p.m.
Logan Ballroom

Concluding Remarks and Next Steps

Dr. Chevelle Newsome, President, Council of Graduate Schools

Poster Abstracts

Session A

PRESENTER

Samantha Brunhaver

Project Title: Transforming Master's-Level Engineering Education through Industry Partnerships, Principled Engineering, and Experiential Learning

NSF Award Number: 2530091

Poster Title: Redesigning Master's Engineering Education for Ethical, Industry-Engaged Practice

PI: Samantha Brunhaver

Poster Abstract: Many master's-level engineering programs emphasize technical depth but provide fewer structured opportunities for students to develop ethical judgment, leadership, interdisciplinary collaboration, and readiness for complex professional practice. This NSF Innovations in Graduate Education project is redesigning Arizona State University's Master of Science in Engineering program and creating a graduate certificate in Principled Engineering Leadership available to engineering graduate students. The initiative integrates interdisciplinary coursework, multi-level mentoring networks, short-term industry residencies, stakeholder-engaged capstone projects, and digital portfolios. Multiple entry points, structured exit options, and stackable credentials are intended to serve learners with varied goals and circumstances. Faculty and industry partners will participate in structured mentoring development and peer exchange. The project will examine mentorship quality, student learning, program participation, and longer-term career outcomes to guide continuous improvement. Ultimately, the work seeks to generate an adaptable, scalable model for graduate engineering education that combines technical expertise with ethical, civic, and professional capabilities.

PRESENTER

Eric Burkholder

Project Title: Assessing and improving real-world problem-solving skills in graduate physics coursework

NSF Award Number: 2429155

Poster Title: The challenges of studying and changing physics graduate education

PI: Eric Burkholder

Poster Abstract: After decades of work to improve and understand undergraduate physics education, the Physics Education Research (PER) community is increasingly looking to graduate education as one of the next research priorities. Early work has examined admissions processes, graduate student teaching assistant training, students' conceptual understanding of quantum mechanics, and how students navigate and experience the arcane structure of graduate programs. This poster will highlight some of the unique methodological challenges of studying and changing graduate education in physics, including: the questionable utility of quasi-experimental designs in classroom intervention studies; the decentralized nature of admissions, teaching, and data-keeping processes in graduate programs; and the curious intransigence encountered when trying to effect change in graduate programs.

PRESENTER

Lujie Karen Chen

Project Title: Collaborative Research: IGE: Track 1: Caselet: Deliberate Practice with Scalable Case-based Learning to Enhance Data Science Problem Solving Competency

NSF Award Number: 2429590 and 2429591

Poster title: Caselet: Towards Scalable Case-Based Learning to Enhance Data Science Problem Solving Competency

PI: Lujie Karen Chen

Poster Abstract: Data Science Problem Solving (DSPS) competency refers to the ability to make key decisions when tackling real-world data challenges. As generative AI becomes increasingly capable of automating low-level routine tasks, it is critical to focus on developing students' higher-order reasoning and problem-solving skills. Despite the high demand for such competencies, training them effectively within typical data science courses remains a challenge. To help students develop robust problem-solving competency, it is essential to expose them to a wide range of problem-solving scenarios. Meanwhile, it is desirable to let students receive timely feedback to prompt reflection and enhance learning. In this poster we present our work piloting Caselets (bite-sized case studies) designed to scaffold students in data science problem-solving—in graduate-level data science courses at University of Maryland Baltimore County (UMBC). We will also share recent explorations aiming to scale up the authoring of Caselets using agentic AI and human-AI collaborative approaches.

PRESENTER

Michael (Misha) Chertkov

Project Title: IGE: Integrating Data Science into the Applied Mathematics PhD: Generalized Skills for Non-Academic Careers

NSF Award Number: 2325446

Poster Title: Student Ambassadors as Connectors: From Events to Mentoring Triads and Research Pathways

PI: Michael (Misha) Chertkov

Poster Abstract: The University of Arizona IGE project uses Applied Mathematics as a testbed for graduate education linking mathematical training, AI and data science, and external research environments. During 2025–2026, the Student Ambassador Program became the project's operating mechanism. Six ambassadors led domain-specific portfolios spanning fusion, semiconductors and photonics, space and astrobiology, environmental systems, national security, and industry-facing scientific computing. They organized Arizona–Livermore Days and a three-day Scientific Computing Roundtable and Workshop, recruited external speakers and partners, and developed follow-up research pathways. One workshop track transitioned into an eight-week mentored space science and astrobiology research program. Year-end evaluation documented five formal mentoring triads and one in development; participants reported high satisfaction with both faculty and external advising, while small sample sizes require cautious interpretation. The no-cost-extension year will synthesize outcomes, prepare an education research manuscript, and test transfer of the ambassador and triad model to additional STEM disciplines and National Laboratory partnerships.

PRESENTER

Leila Daneshmandi

Project Title: Creating Bold STEM Leaders Through Graduate Entrepreneurial Training

NSF Award Number: 2325444

Poster Title: Creating Bold STEM Leaders Through Graduate Entrepreneurial Training

PI: Leila Daneshmandi

Poster Abstract: Graduate STEM students receive limited structured entrepreneurial training. We present the Entrepreneurship Fellowship Program (EFP), a non-selective, cohort-based, year-long program at the University of Connecticut that trains STEM graduate students through three modules: fall and spring technology innovation and entrepreneurship coursework with pitch competitions, NSF I-Corps, prototyping grants, and travel support, followed by a summer experiential entrepreneurship placement, with socialization meetings throughout. Using a mixed-methods, longitudinal design, we assessed entrepreneurial self-efficacy (ESE), the Entrepreneurial Mindset Profile (EMP), the Multifactor Leadership Questionnaire (MLQ), and qualitative self-reflections across four time points. Results showed increased cohort-level entrepreneurial confidence and awareness, along with notable within-student growth across multiple ESE and EMP domains. The EFP offers a scalable, adaptable model for embedding entrepreneurship in STEM graduate education.

PRESENTER

Elise Demeter

Project Title: Applying Cognitive Theories of Learning to Improve Graduate Training in STEM Communication

NSF Award Number: 2325453

Poster Title: Bringing STEM Communication Training to Your Campus: A research-based, freely available curriculum for graduate students

PI: Elise Demeter

Poster Abstract: As graduate STEM education strives to meet workforce and societal needs, students must be trained in effective science communication. We created and evaluated scalable online short courses designed to improve graduate STEM communication skills. This project assessed: (1) whether foundational training in cognitive science theories of communication enhanced learning and skill transfer across different contexts, (2) whether short, asynchronous online courses increased students' self-perceived communication abilities and confidence, and (3) whether authentic, public-facing deliverables demonstrated mastery of core communication outcomes. We found limited evidence that grounding training in cognitive science theories improves students' perceived abilities. However, students' confidence and perceived abilities improved robustly following the courses. Furthermore, faculty evaluations confirmed that students successfully demonstrated mastery of learning outcomes across course deliverables. The complete curriculum is publicly available to help transform graduate STEM education nationwide.

PRESENTER

Cynthia Fuhrmann

Project Title: The inaugural pd|hub Collection: Ready-to-use program materials to support student/postdoctoral career exploration (Affiliate Poster)

Project Leads: Barbara Natalizio, Katie Kearns, Ryan Bixenmann, Bill Lindstaedt, Fuhrmann

Poster Abstract: Professional Development Hub (pd|hub) (an NIH-funded affiliate of IGE Hub) has curated a collection of five workshops/series/courses to support graduate students in career exploration. This poster highlights the intentional design of these models, along with a centralized evaluation study across 36 implementation sites. The models are part of the inaugural pd|hub Collection–disseminated through pd|hub's unique approach supporting (a) authors disseminating their work and (b) faculty/staff seeking evidence-based strategies for teaching professional skills. This poster introduces three potential future opportunities for IGE awardees: (1) accessing lesson plans (coming soon!) from this initial pd|hub Collection focused on PhD career exploration, (2) partnering on future pd|hub Collections to disseminate IGE-funded innovations in other skills areas, and (3) joining the pd|hub Mentorship Action Collaborative, bringing members of the graduate and postdoctoral training communities together to advance evidence-based mentorship practices supporting PhD career development.

PRESENTER

Susan Fullerton Shirey

Project Title: A Personalized Learning Model for STEM Graduate Education

NSF Award Number: 2325599

Poster Title: A Personalized Learning Model for STEM Graduate Education

PI: Susan Fullerton Shirey

Poster Abstract: The personalized learning model (PLM), funded by NSF's Innovations in Graduate Education (IGE) program, is a student-centered model piloted in Chemical Engineering at the University of Pittsburgh's Swanson School of Engineering. It aligns coursework and professional development with career objectives. The model includes five components: (1) instructional goals, (2) task environment, (3) scaffolding of instruction, (4) assessment of performance and learning, and (5) reflection and evaluation. From a student perspective, activities include personalized goal setting, a modularized curriculum, and co-curricular career development opportunities. Key outcomes include improvement in student goal writing, satisfaction with the development and use of individual development plans (IDPs), demonstration of a "Faculty Learning Community" to modularize the core curriculum, favorable faculty ratings, and students reporting strong career preparedness (interview average 9/10) and solid satisfaction on a broader survey (n = 42). Findings offer a replicable model for other STEM graduate programs seeking to personalize doctoral education.

PRESENTER

Tranae Hardy

Project Title: Creating Learning Environments for Advancing Researchers (CLEAR)

NSF Award Number: 2429880

Poster Title: Creating Learning Environments for Advancing Researchers (CLEAR)

PI: Julia Kent

Poster Abstract: Previous IGE research at the University of California, Berkeley (NSF #1954923) has shown a strong correlation between student success and structured program environments. Working with a network of 10 universities, CGS is collecting data to examine whether this finding holds across a broader range of institutions and programs. This project has the potential to improve the educational and career outcomes for all graduate students by creating greater transparency about the steps needed to successfully complete the PhD and transition to a STEM career. Preliminary findings show that the majority of students report their programs provide feedback at key degree milestones as well as provide regular opportunities to get information about program expectations, requirements, and/or policies. However, over 40% of students were unsure where to seek support or did not feel adequately supported when they got off track.

PRESENTER

Melissa Jacquart

Project Title: Engaging Science: Transforming Graduate Education through Public Engagement with Science

NSF Award Number: 2224857

Poster Title: Transforming Graduate Education through Training in Public Engagement with Science

PI: Angela Potochnik

Poster Abstract: Academic scientists are increasingly called upon to engage in public outreach, and an ever-increasing number of graduate degree-holders are finding employment in roles related to public outreach. Graduate programs across the sciences have the potential to address this need, but most focus almost exclusively on research. Our team from University of Cincinnati's Center for Public Engagement with Science has developed an interdisciplinary curriculum focused on training in theory and best practices related to conducting public engagement about science. The curriculum incorporates extensive community partnership, interdisciplinary collaboration, and methods from philosophy of science, and enrolls students from across the physical, biological, and behavioral sciences. Poster describes the three components of the curriculum: workshop, semester-long seminar, and summer fellowship. We also detail the curriculum's transformative potential to equip graduate students to engage public audiences in a more meaningful, robust way; to encourage collaboration across disciplines; and improve students' sense of belonging in STEM.

PRESENTER

Elizabeth Jakob

Project Title: Preparing STEM Graduate Students for Inclusive Leadership

NSF Award Number: 2429373

Poster Title: Preparing STEM Graduate Students for Inclusive Leadership

PI: Elizabeth Jakob

Poster Abstract: We prepare STEM Ph.D. students for leadership roles in academia. In Year 1 of a 2-year program, Fellows take interactive workshops focusing on skills such as understanding and fostering belonging, understanding emotional intelligence, and engaging productively in challenging conversations. Panel discussions feature leaders at all stages, including recent graduate students, professors at different career stages, faculty union officers, ADVANCE grant leaders, deans, and provosts, who share their paths to and motivation for leadership. In Year 2, Fellows work in small groups on projects positioned in different campus offices, such as creating resources for mentors of international students in the Office of Global Affairs, providing teaching assistants with resources about fostering belonging in their classes in the Provost's Office, and refining resources on inclusion with the Center for Teaching and Learning. In Year 2, cohort members also meet with personal coaches. We monitor knowledge gains and wellbeing through periodic surveys.

Session B

PRESENTER

Michael Jarstfer

Project Title: My PhD: Incorporating Student-Centered Assessments into the Core of PhD Training

NSF Award Number: 2325518

Poster Title: MyPhD: A Practical Framework for Career-Aligned Doctoral Training

PI: Michael Jarstfer

Poster Abstract: STEM PhD students pursue diverse career paths across academia, industry, government, entrepreneurship, and other sectors, yet doctoral training often focuses primarily on competencies within a student's scientific discipline. The MyPhD framework was developed to help graduate programs integrate career and professional development into doctoral education in a practical, intentional manner without adding new requirements. Rather than creating separate activities, MyPhD leverages structures already present in most PhD programs, including qualifying exams, committee meetings, and program milestones. The framework emphasizes individualized competency development, structured mentoring, and milestone-based assessment to help students connect their research training with long-term career goals. This poster provides a practical "how-to" guide for implementing MyPhD, including core design principles, stakeholder roles, competency assessment approaches, and lessons learned from early implementation. By embedding professional development into traditional doctoral training, MyPhD offers a scalable approach to supporting diverse career outcomes while preserving the rigor of doctoral research training.

PRESENTER

Hua Li

Project Title: IGE: Transdisciplinary Research in Graduate Engineering Education (IGE-TREE)

NSF Award Number: 2225109

Poster title: Interactive Workshops and Service-Learning Projects to Enhance Graduate Students' Transdisciplinary Research Skills

PI: Hua Li

Poster Abstract: In transdisciplinary research, we move from sharing different analyses or creating new applications to creating a space for shared dialogue, leading to a joint analysis using new approaches that could not have existed without the crisscrossing of ideas to knit a new web of knowledge and form novel frameworks to catalyze scientific discovery and innovation. A group of faculty members from education, engineering, and anthropology developed and implemented a series of workshops and service-learning projects that were designed to increase graduate students' knowledge and skills in three thrust competencies: intercultural competence, community-engaged practice, and qualitative and quantitative mixed research methods. These three competencies were chosen as key knowledge and skills needed to enable graduate students to conduct transdisciplinary research.

PRESENTER

Russell W. Mailen

Project Title: The Writing SySTEM: A Systemic Approach to Graduate Writing Instruction and Intervention

NSF Award Number: 2224967

Poster Title: The Writing SySTEM: A Systemic Approach to Graduate Writing Instruction and Intervention

PI: Russell W. Mailen

Poster Abstract: Graduate students in engineering are often unprepared or underprepared to complete discipline-specific writing projects, such as term papers, conference and journal papers, or a thesis or dissertation. However, most engineering programs offer minimal systemic support for graduate writing education and, instead, require students to develop technical writing skills by modeling existing publications or through one-on-one, ad hoc instruction from their research mentor. In this project, we seek to determine the relationships among self-efficacy, self-regulation of writing, and writing ability in the context of engineering graduate education that includes systematic writing instruction and intervention structures. We implement four interventions: writing workshops, technical writing courses, peer writing groups, and open educational resources. These interventions provide discipline-specific instruction and are evaluated via the Metacognitive Strategy Knowledge Test, the Writing Self-Regulatory Efficacy Scale, and semi-structured interviews. The study identified opportunities for targeted instruction related to managing distractions and integrating writing into the research workflow.

PRESENTER

Mark Moritz

Project Title: IGE: Training Scientists to Tackle Grand Challenge Societal Problems through Convergent Action in Transdisciplinary Teams

NSF Award Number: 2224769

Poster Title: Attracting and Cultivating Wicked Scientists: Community, Identity, and Transdisciplinary Learning in a Graduate Interdisciplinary Specialization

PI: Mark Moritz

Poster Abstract: The goal of our project was to assess whether students participating in a graduate interdisciplinary specialization developed the competencies of transdisciplinary problem solvers. We used a mixed methods approach combining psychometric assessments of systems thinking, sense of belonging, and interdisciplinary motivation, with qualitative analyses of course learning assessments and transcripts from two student focus groups. Findings indicate that students already scored higher on systems thinking and interdisciplinary motivation than those in the control group, suggesting the program attracts students with pre-existing transdisciplinary dispositions. However, course evaluations demonstrated that students developed a more sophisticated grasp of core concepts and effectively applied transdisciplinary skills to their work. Ultimately, the program provided a shared intellectual home for students already committed to transdisciplinary work, offering both a sense of belonging and targeted training that helped transform transdisciplinary inclinations into professional identities as wicked scientists.

PRESENTER

Krishna Pakala and Angela Minichiello

Project Title: Collaborative Research: Scalable Storytelling Interventions to Support Graduate Student Success in STEM

NSF Award Number: 2325041 and 2325042

Poster Title: Rewriting the STEM Narrative: Storytelling as a Catalyst for Graduate Student Success

PI: Krishna Pakala and Angela Minichiello

Poster Abstract: Graduate education in science, technology, engineering, and mathematics (STEM) often prioritizes technical expertise while giving less attention to professional identity, belonging, and impostor feelings, factors that can shape persistence and career development. This project investigates personal storytelling as a human-centered, co-curricular approach to supporting graduate student success. In collaboration with The Story Collider, participants engage in workshops that guide them in developing, refining, and publicly sharing true stories about their STEM experiences. The mixed-methods study examines changes in participants' STEM and researcher identities, sense of belonging, social fit, and impostor feelings through pre- and post-intervention measures, personal narratives, and semi-structured interviews. Audience surveys also explore whether exposure to these stories influences perceptions and stereotypes of scientists and engineers. By integrating narrative identity, reflective meaning-making, and community engagement, this work considers storytelling as a scalable pedagogical practice for fostering inclusive graduate environments and broadening perceptions of who belongs in STEM education.

PRESENTER

Ramakrishna Podila

Project Title: Track 2: AI-Driven Virtual Teaching Assistant (ViTA) in Medical Biophysics Graduate Education

NSF Award Number: 2530060

Poster Title: Developing and Evaluating a Retrieval-Augmented Virtual Teaching Assistant for Interdisciplinary Graduate Education

PI: Ramakrishna Podila

Poster Abstract: This NSF IGE project develops ViTA, an AI-driven Virtual Teaching Assistant for interdisciplinary graduate education in medical biophysics. ViTA uses retrieval-augmented generation (RAG) to ground responses in instructor-approved course materials, reducing hallucinations while supporting personalized, context-aware instruction. The current pipeline chunks course content, generates MiniLM embeddings, retrieves relevant passages, and incorporates multi-turn query reformulation; we are also evaluating hybrid retrieval with reciprocal-rank fusion. System performance is tested on held-out, expert-curated questions using multi-dimensional retrieval metrics, together with answer-level assessments of correctness, grounding, citation quality, and failure modes. We compare baseline and improved retrieval strategies through paired evaluation to determine whether changes produce measurable gains rather than anecdotal improvements. The broader IGE evaluation connects these technical metrics with student learning, engagement, confidence, cognitive load, and faculty feedback to assess whether ViTA can provide scalable, evidence-based support for effective interdisciplinary graduate education.

PRESENTER

Benjamin Stewart

Project Title: IGE Track 1: Science to Policy: Operationalizing Knowledge from Education to Society (SPOKES)

NSF Award Number: 2429934

Poster Title: Policy Practices as Convergence Training: A Transdisciplinary Approach to Graduate Student Professionalization

PI: Susan Hackwood

Poster Abstract: UC Riverside's Science to Policy (S2P) Program delivers a yearly certificate course to interdisciplinary cohorts of STEM PhD students. The SPOKES IGE aims to assess and iteratively refine the course, which offers (1) foundational policy knowledge and (2) applied training in policy competencies. In developing the SPOKES Framework, S2P's teaching team has increased the program's focus on skill synthesis. The course now features a range of case study assessments that require students to apply competencies under time constraints (e.g., in mock hearings or simulated, high-stakes briefings). These simulations of the policy workplace introduce students to the everyday requirements of policymaking; additionally, they offer preparation for a range of professional roles—especially for jobs whose pressures are similar to those of the policy world. SPOKES offers a pedagogical framework for convergence training. This transdisciplinary approach to professionalization enables graduate students to acquire a flexible, broadly applicable set of skills.

PRESENTER

David E. Thompson

Project Title: A Comprehensive Model for Improving STEM Graduate Student Success at a Regional R2 Public University

NSF Award Number: 2529993

Poster Title: One Program, Three Strands: Launching CASCADE, a Model for STEM Graduate Success at a Regional R2 University

PI: David E. Thompson

Poster Abstract: CASCADE is a transferable model for improving STEM graduate student success at Sam Houston State University, a regional R2 public university and Hispanic-Serving Institution. Incoming STEM graduate students are invited into one program with three strands: a Career Mindset Program whose eight-seminar arc, career roundtables, and mock interviews build a Career Mindset Portfolio; enhanced professional development through the Graduate School: writing groups with STEM-faculty consultations, a grant-writing and peer-review series, and an Instructor-of-Record pathway; and a cascading mentoring network where CIMER-trained Peer Innovators lead program-matched pods of first-year students, supported by Faculty Lead Mentors. A light, integrated core, asynchronous access for part-time and online students, and participation incentives tie the strands together. Year 1 established the institutional baseline and trained the founding Peer Innovator cohort at the CASCADE Summer Institute. The poster presents the program structure, Year 1 capacity building, the start of Year 2, and the assessment framework.

PRESENTER

Allison M. Traylor

Project Title: TRIAGE: Techniques for Resolving Intragroup Conflict to Advance Graduate Education

NSF Award Number: 2325521

Poster Title: TRIAGE: Techniques for Resolving Intragroup Conflict to Advance Graduate Education

PI: Allison Traylor, Ph.D.

Poster Abstract: Drawing from proven science on conflict management, this project focuses on developing a set of tools aimed at helping graduate students develop conflict management skills, assess conflict in their teams, and identify interventions to help their teams navigate conflict. This presentation highlights the graduate student resources created as part of our training program. In addition, we summarize findings from our recent field experiment testing the efficacy of our training program. This poster presentation will summarize the findings from our training evaluation and introduce attendees to our resources. We will also discuss final project milestones, which include disseminating these resources and evaluating an AI-enabled team coaching tool for graduate students.

PRESENTER

Heather True-Krob

Project Title: Interdisciplinary Scientific Immersion Program for entering PhD students

NSF Award Number: 2325475

Poster Title: Interdisciplinary Scientific Immersion Program

PI: Heather True-Krob

Poster Abstract: Incoming graduate students in the Roy and Diana Vagelos Division of Biology and Biomedical Sciences at Washington University in St. Louis (DBBS) build interdisciplinary skills and community through participation in the Interdisciplinary Scientific Immersion Program (ISIP). WashU's DBBS is a historic umbrella program that includes 12 biomedical science PhD programs. Streamlined PhD programs and fewer required courses helped reduce time to degree. One consequence, however, was that students had fewer opportunities to interact with peers in other programs. ISIP brings all new DBBS students together to work with peers and faculty on short, interdisciplinary research projects. On top of building the essential skills needed to complete their thesis successfully, we also strive to create interdisciplinary networks among our students and hope they will use those connections to drive collaborative research across campus. In addition, the program focuses on scientific communication skills, highlighting the importance of building these skills early.

2026
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