# CADRE Topical Working Groups: A Retrospective

Since its inception, CADRE has amplified the knowledge and experience of the DRK–12 community through several key strategies. Forming and supporting topical working groups was one approach that supported collaboration among DRK–12 grantees and resulted in knowledge building through webinars and products such as briefs and reports.

Though some of CADRE's groups developed organically as communities of practice, many of CADRE's topical working groups were purposely designed to convene the right people around the right questions, then aim them toward a concrete product that other researchers, practitioners, or education decision-makers could use. Topics were selected by looking closely at the DRK–12 portfolio, listening to awardee interests, and tracking national and NSF priorities. Each group brought together DRK–12 awardees and project team members (including early-career researchers) and was facilitated by CADRE. With CADRE handling logistics and production supports, participants could concentrate on knowledge sharing, synthesis, and writing for decision makers. External review strengthened rigor; broad dissemination by CADRE and group members amplified reach.

The model delivered knowledge syntheses and timely, usable guidance. CADRE convened three artificial intelligence (AI) working groups focused on different aspects of AI and STEM education research. This resulted in three briefs: ***The Potential of Using AI to Improve Student Learning in STEM: Now and in the Future*** (Feb. 2025) positions AI as a learning partner that personalizes support while calling out bias and equity concerns; ***Generative AI in STEM Teaching: Opportunities and Tradeoffs*** (Jan. 2025) maps near-term GenAI classroom uses and reaffirms teachers' central role; and ***Toward Ethical and Just AI in Education Research*** (Jun. 2024) offers a practical framework and tools for inclusive, responsible AI in education research and development.

Assessment was another sustained strand. A working group of experts convened to develop the report ***Classroom-Based STEM Assessment: Contemporary Issues and Perspectives*** (Aug. 2023), which synthesizes what is known about assessment for improving teaching and learning and suggests directions for future research. An earlier working group captured emerging approaches to judging students' knowledge and skills in e-learning contexts in the ***New Measurement Paradigms*** report (Apr. 2012), nodding to current interest in embedded, authentic assessment.

Additional group topics included early learning, professional development (PD), English language learners, and dissemination and knowledge use. ***Considerations for STEM Education from PreK Through Grade 3*** (Sep. 2018) translated research on early learning into actionable guidance for classrooms and educator professional learning. On teacher learning, ***Emerging Design Principles for Online and Blended Teacher Professional Development in K–2 STEM Education*** (Nov. 2017) distilled consensus design guidance as districts implemented and scaled virtual PD. The briefs, ***Fostering Knowledge Use in STEM Education: A Brief on R&D Partnerships with Districts and Schools*** (Dec. 2010) and ***Dissemination in STEM Education R&D: Perspectives on Knowledge Use*** (Nov. 2009) emphasized the importance of partnerships for research uptake. ***Math and Science Education with English Language Learners: Contributions of the DRK–12 Program*** (Jan. 2011) answered the questions: Who is being supported by

DRK–12 to do this type of research, what are they studying, and how are these projects contributing to the field?

The broadening participation working group added a crucial equity lens with two complementary products: ***Creating Inclusive PreK–12 STEM Learning Environments*** (Oct. 2018), a brief urging districts, schools, and states to take concrete, level-appropriate actions to broaden participation so that *all* students benefit from quality STEM, and ***The Use of Theory in Research on Broadening Participation in PreK–12 STEM Education: Information and Guidance for Prospective DRK–12 Grantees*** (Aug. 2018), which surfaces theories actively used by DRK–12 researchers—many not yet widely published—to help proposers ground future studies in robust conceptual frameworks.

Across topics—AI, assessment, early learning, online/blended PD, and broadening participation—the through line was disciplined synthesis in service of usable products. Steering committees co-constructed frameworks, participants iterated on drafts, and the collective process surfaced what is truly generalizable across projects. In retrospect, CADRE's working groups show how a resource center can accelerate field learning by responding to priorities, convening diverse expertise, supporting the craft of synthesis, and publishing products for researchers, educators, and leaders. The result is a portfolio of briefs and reports that not only reflect DRK–12 research but also help guide the next wave of inquiry and implementation.

We extend our deep appreciation to all those in the DRK–12 community who generously contributed their time, expertise, insight, and collaborative spirit to these working groups and resulting products. Their collective work has enriched the DRK–12 knowledge base and continues to inform and inspire the field.