



Research and Evaluation Support for National Science Foundation-Funded Projects - Selected Corporate Capabilities (Updated February 2026)

Over the past 2 decades, RMC Research (RMC) has partnered with various institutions of higher education and others to develop successful proposals for National Science Foundation (NSF)-funded projects. Across a wide range of funded projects focused on STEM (science, technology, engineering, and mathematics) teaching and learning, our staff has supported research and evaluation activities as co-principal investigators and external evaluators. As a result, we are well-positioned to support:

- Project logic model development;
- Proposal development and review;
- Study design;
- Participant recruitment and management;
- Development of data collection instruments;
- Administrative and survey data collection;
- Qualitative data collection, including classroom observation, focus groups, interviews, and document reviews;
- Implementation monitoring;
- Data management and analysis; and
- Reporting and dissemination.

In addition to developing and implementing research and evaluation activities, we also serve as thought partners in the proposal development and project implementation processes. We have experience working across a range of NSF funding programs and with a variety of partners.

Below are examples of NSF-funded projects in which RMC has served as a research and evaluation partner.

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Current and Recent Experience with NSF Programs

- Advancing Informal STEM Learning (AISL)
- Advanced Technological Education (ATE)
- Discovery Research K-12 (DRK-12)
- Established Program to Stimulate Competitive Research (EPSCoR)
- Improving Undergraduate STEM Education (IUSE)
- Integrative Graduate Education and Research Traineeship (IGERT) Program
- Innovative Technology Experiences for Students and Teachers (ITEST)
- Robert Noyce Teacher Scholarship Program
- NSF Research Traineeship (NRT)
- Mathematics and Science Partnership (MSP) Program

Current and Recent Project Partners

Arizona State University
Boise State University
Clemson University
Dordt University
Georgia Institute of Technology
Louisiana State University
Montana State University
Omaha Public Schools
Portland Public Schools
Portland State University
Phoenix College
University of Colorado Denver
University of Idaho
University of Louisiana at Lafayette
University of Montana
University of Nebraska-Lincoln
University of Nebraska-Omaha
University of Tennessee at Martin
Utah State University
Wayne State University
Wichita State University

Examples of Ongoing and Recent Projects

Discovery Research K-12 (DRK-12). The DRK-12 program is designed to enhance the learning and teaching of science, technology, engineering, mathematics and computer science (STEM) by students and teachers in formal preK-12 education settings.

Developing Leaders, Transforming Practice in K-5 Mathematics (DLTP) (RMC Research, 2019-2023). In partnership with Portland Public Schools (PPS) and Portland State University (PSU), RMC used a quasi-experimental design and multimethod approach to evaluate the effectiveness of the DLTP professional development (PD) model which used Elementary Mathematics Specialists (EMS) to support K-5 mathematics teachers. This project was focused on demonstrating the effectiveness of the DLTP PD model in terms of improving teachers' instructional practices (Goal 1), increasing student mathematics understanding and achievement (Goal 2), and evaluating the efficacy and use of Elementary Mathematics Specialists (EMSs) by testing four implementation models that take into account the various ways EMSs are integrated into schools (Goal 3). The student achievement study (Goal 2) was designed to provide evidence that meets WWC Group Design Standards with Reservations. Exploratory analyses examined the impact of being taught by a DLTP participating teacher overtime on student mathematics achievement. The study design included measures of fidelity, observations, and survey measures to provide formative feedback about the intervention implementation and triangulated the findings from the impact analysis.

Longitudinal Learning of Viable Argument in Mathematics for Adolescents (LLAMA) (University of Idaho; 2016-2021). RMC is partnering with the University of Idaho to implement the LLAMA project which is funded through a DRK-12 Design and Development grant (Learning strand). The project is designed to develop and examine an instructional intervention combining a learning progression and the practice of teaching and learning with and through viable argumentation. The intervention is designed to improve students' abilities to construct viable arguments and critique the arguments of others. RMC staff serve as co-principal investigators and lead an experimental research study of the LLAMA intervention to examine its impact on student achievement using standards-aligned assessments from the Smarter Balanced Assessment system.

Student-Adaptive Pedagogy for Elementary Teachers: Promoting Multiplicative and Fractional Reasoning to Improve Students' Preparedness for Middle School Mathematics (University of Colorado Denver; 2015-2021). This Design and Development project, funded through the DRK-12 Learning strand and led by the University of Colorado Denver, was designed to develop, implement, and evaluate a professional development intervention focused on shifting upper-elementary teachers' mathematics teaching toward a constructivist approach known as student-adaptive pedagogy (AdPeD), which adapts teaching goals and activities based on students' conceptions and experiences, with a focus on multiplicative and fractional reasoning. School-wide professional development is provided to teachers in Grades 3-5 in urban schools with large, underserved student populations. An RMC staff member serves as a co-principal investigator leading research activities to examine effects on teacher practices and student outcomes. RMC leads data collection instrument development and validation activities, focusing on tools to measure: (a) teacher growth toward adaptive pedagogy and (b) student growth in multiplicative reasoning. Study findings have been presented to researchers, policymakers, and practitioners at several state and national conferences.

Collaborative Research: Developing Leaders, Transforming Practice in K-5 Mathematics: An Examination of Models for Elementary Mathematics Specialists (Portland Public Schools and Portland

State University; 2019-2023). RMC is partnering with Portland Public Schools and Portland State University to implement a DRK-12 late-stage Design and Development grant to assess the effectiveness of the Developing Leaders, Transforming Practice (DLTP) professional development model. Project research uses a quasi-experimental design and multimethod approach to evaluate the effectiveness of the model which uses Elementary Mathematics Specialists (EMS) to support K-5 mathematics teachers. Research activities conducted by RMC focus on examining the project's effectiveness in terms of improving teachers' instructional practices (Goal 1), increasing student mathematics understanding and achievement (Goal 2), and evaluating the efficacy and use of EMS by testing four implementation models that take into account the various ways EMSs are integrated into schools (Goal 3). Analyses of impact on student achievement are designed to provide evidence that meets What Works Clearinghouse Group Design Standards with reservations. Exploratory analyses are used to examine the impact of teacher DLTP participation on student mathematics achievement over time. The study design includes measures of implementation fidelity, observations of professional development and classroom implementation, and survey measures to provide formative feedback and triangulate the findings from the impact analysis.

Learning Algebra and Methods for Proving (LAMP) (University of Idaho; 2013-2016). Working with the University of Idaho, RMC conducted the external evaluation of this DRK-12 project focused on testing and refining a learning trajectory and corresponding assessments related to learning algebra. The goals of LAMP were to: (1) produce evidence-based curriculum materials for improving student learning of reasoning, proving, and argumentation in eighth-grade classrooms where algebra is taught; (2) produce empirical evidence that forms the basis for scaling the project to a full research and development project; (3) refine a set of instruments and data collection methods to support a full research and development project; and (4) document considerations, such as teacher support and primary curriculum adjustments, needed for portability of the materials to any classroom. RMC examined the development of curricula and the implementation of learning trajectories for teachers. Evaluation findings were used to provide feedback to the project leadership team regarding ways to enhance the learning development and implementation process. Additionally, RMC reviewed the project management processes, communication structures, and utility of cross-organizational teams for research. Quasi-experimental design was used to assess program impact on participating students through analysis of student achievement data, comparing the achievement of LAMP students to nonparticipating comparison students.

Examining Coaching in Elementary (K-8) Mathematics Classrooms (Montana State University and the University of Idaho; 2009-2015). RMC conducted the external evaluation of this DRK-12 project led by Montana State University and the University of Idaho. The project focused on investigating the types and depth of knowledge needed by effective instructional coaches in K-8 mathematics classrooms. Over 200 coaches and teachers across eight states (Colorado, Georgia, Idaho, Montana, Nebraska, North Dakota, Washington, and Wisconsin) participated through coaching sessions, online assessments, and classroom observations. RMC conducted a mixed-methods evaluation of the project based on qualitative and quantitative data, including observation of project activities, interviews and focus groups with project stakeholders, document review, and analysis of teacher survey data. Findings revealed that improvements in coaches' perceptions of their skills in coaching standards-based mathematics content and practices were related to improvements in teachers' mathematics knowledge for teaching, teaching practice, and self-efficacy.

Advancing Informal STEM Learning (AISL). The AISL program is committed to funding research and practice, focusing on investigating a range of informal STEM learning (ISL) experiences and environments designed to support lifelong learning. Projects center engagement, broadening participation, and belonging, and further the well-being of underserved individuals and communities. Program funding prioritizes institutions and organizations that serve public audiences, and focus on public engagement with and understanding of STEM, including community STEM; public participation in scientific research; science communication; intergenerational STEM engagement; and STEM media.

Facilitating Constructive Engineering Talk (University of Nebraska-Lincoln 2024-present). RMC is conducting the external evaluation of the Facilitating Constructive Engineering Talk (FACET) project, using a mixed-methods design to examine the extent to which informal engineering design activities affect teacher practice and the engineering learning of diverse rural youth. The evaluation uses an improvement-focused evaluation model, collecting qualitative and quantitative data to inform the quality of the materials, design iterations, perceived impacts on teachers and students, strengths and challenges associated with implementation, and the extent to which the project meets its objectives.

Established Program to Stimulate Competitive Research (EPSCoR). Through the EPSCoR program, NSF establishes partnerships with government, higher education, and industry that are designed to support sustainable improvements in a jurisdiction's research infrastructure, Research and Development (R&D) capacity, and hence, its R&D competitiveness. The Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations (RII Track-2 FEC) program builds interjurisdictional collaborative teams of EPSCoR investigators in scientific focus areas consistent with NSF priorities. Projects are investigator-driven and must include researchers from at least two EPSCoR eligible jurisdictions with complementary expertise and resources necessary to address challenges, which neither party could address as well or rapidly independently. The STEM research and education activities should seek to broaden participation through the strategic inclusion and integration of diverse individuals, institutions, and sectors throughout the project. The development of diverse early-career faculty is a critical component of this sustainable STEM capacity.

RII Track-2 FEC: Resilience Informatics for the Convergence of Critical Capacities to Address Regional-Scale Environmental Change (University of Nebraska-Lincoln and University of Montana; 2019-2023). Funded through a 4-year Research Infrastructure Program Track-2 Focused EPSCoR Collaboration grant, the "Resilience Informatics for the Convergence of Critical Capacities to Address Regional-Scale Environmental Change" is led by the University of Nebraska-Lincoln and the University of Montana. The project intends to: (1) recruit, train, and engage diverse junior faculty in research activities, (2) develop collaborations between institutions in multiple states and with external stakeholders in various jurisdictions; and (3) address a specific and compelling problem related to a scientific topic area of national importance as part of the EPSCoR focus on "Harnessing the Data Revolution to Solve Problems of National Importance." Postdoctoral, PhD, and, eventually, undergraduate students will be hired at each institution to work with faculty on research that examines large, regional-scale transitions in vegetation. The project involves bioscience faculty in developing resilience informatics screening tools for more advanced and earlier detection of vegetation transitions, which are key to food and water security. RMC is conducting a mixed-methods evaluation to assess progress towards goals using document review, focus groups and interviews, and project data.

Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR) and Hispanic-Serving Institutions (IUSE: HSI). IUSE:EHR is a core NSF STEM education program that seeks to promote novel, creative, and transformative approaches to generating and using new knowledge about STEM teaching and learning to improve STEM education for undergraduate students. IUSE: EHR supports projects that seek to bring recent advances in STEM knowledge into undergraduate education, that adapt, improve, and incorporate evidence-based practices into STEM teaching and learning, and that lay the groundwork for institutional improvement in STEM education. IUSE:HSI seeks to enhance the quality of undergraduate STEM education at HSIs and to increase retention and graduation rates of undergraduate students pursuing degrees in STEM at HSIs. In addition, the program seeks to build capacity in undergraduate STEM education at HSIs that typically do not receive high levels of NSF grant funding.

Virtual/Augmented-Reality Based, Discipline Exploration Rotations (VADERs) (Clemson University; 2021 - present). This IUSE: Engaged Student Learning Level-3 study aims to address two persistent nation-wide problems in engineering education: retention and capacity building for a diverse and inclusive engineering workforce, through the use of gradually-advancing and innovative virtual/augmented-reality-based discipline exploration rotations. The evaluation uses a mixed methods design with qualitative and quantitative data to document implementation progress (formative evaluation) and intervention impact on participating undergraduate students (summative evaluation).

Implementing Techtivities to promote Covariational Reasoning and Institutional Change in College Algebra (ITsCRITICAL) (University of Colorado Denver; 2020-2025). This IUSE transformational project built a partnership between the University of Colorado Denver and three Hispanic serving institutions: Metropolitan State University of Denver, Texas State University, and Santa Fe Community College to develop and implemented innovative digital tasks (Techtivities) for college Algebra courses. Project goals included building infrastructure to enact the projects “DEEP theory of change” across institutions to transform instructions, sustaining transformative instructional practices across institutions and drawing connections between instructional practices, instructors’ beliefs, and students’ covariational reasoning, math attitudes, and course success. The evaluation used mixed methods design, using qualitative data (e.g., interviews, focus groups, and document review) and quantitative data (e.g., student assessment), to track progress and examine program impact.

Building Capacity: Integrating Research, Mentoring, and Industry Collaborations to Improve STEM Recruitment and Retention (Phoenix College; 2019-2023). The purpose of this IUSE:HSI project is to explore and evaluate how course-based undergraduate research experiences (CUREs) can be adapted, implemented, supported, and assessed at 2-year HSIs. Project goals are to: (1) promote pro-science attitudes and increased interest in STEM disciplines among underrepresented students; (2) increase recruitment and retention of underrepresented students in introductory STEM courses; (3) increase the number of students from 2-year HSIs who transfer into STEM degree programs at 4-year institutions or workforce programs; and (4) establish innovative cross-sector partnerships with industry to improve workforce readiness and promote interest in STEM careers among 2-year HSI students. To achieve these goals, Phoenix College is developing a STEM-CURE intervention that incorporates multi-disciplinary research experiences into the STEM curriculum throughout the Maricopa Community College District. RMC is conducting a mixed-methods evaluation that includes interviews and focus groups, document review, student surveys, and observations of training activities. Participants backgrounds and roles, project implementation, project research activities, program outcomes, factors that facilitate and impede outcomes, lessons learned, and suggestions for improvement are being examined.

An Innovative Computational Modeling Intervention to Facilitate Learning of Biology in University Courses using Simulation and Dynamical Systems Approaches (University of Nebraska-Lincoln; 2014-2020). The goal of this IUSE project at the University of Nebraska-Lincoln was to implement computational modeling as a pedagogical aid to improve student systems thinking. RMC conducted the external evaluation of this project which used qualitative and quantitative methods to measure the effectiveness of the Computational Modelling Intervention and identified advantages and constraints of implementation. The formative evaluation focused on the quality of processes and products, including the computer models and simulations, professional development materials for life science courses, and the effectiveness of the approaches being used to support teacher and graduate student knowledge and skills to implement projects and engage in reflective practice for improvement. The summative evaluation featured a quasi-experimental design to determine impact in multiple teacher and student domains.

Using Bricklayer Coding and Visual Art to Engage Students in Learning Mathematics (University of Nebraska-Omaha; 2017-2021). This project supports the design, implementation, and evaluation of a new interdisciplinary general-education course at the University of Nebraska Omaha. The course uses the visual arts to motivate students to develop mathematical and computational thinking skills based on Bricklayer, an open-source educational ecosystem in which students learn to write programs that create two- and three-dimensional LEGO, Minecraft, and 3D-printed artifacts. The overarching goal of the project team is to increase interest, participation, and persistence in the STEM disciplines by transforming how undergraduate students engage with and learn mathematics. RMC adopts qualitative and quantitative methods to document project implementation and impact, including data from surveys, interviews, and focus groups.

Implementing Tectivities to Promote Students' Covariational Reasoning in College Algebra (ITSCoRe) (University of Colorado Denver; 2017-2020). Led by the University of Colorado Denver, ITSCoRe was an IUSE project designed to develop, implement, and study Tectivities: free, web-based, learning experiences that link video animations with dynamic, interactive graphs. These activities focused on students' covariational reasoning, which involved forming and interpreting relationships between changing quantities. Using an embedded professional development intervention, the project was designed to foster college algebra instructors' use of Tectivities with their students and accomplish three goals: (1) develop and validate an instrument measuring students' covariational reasoning; (2) improve student outcomes in college algebra by increasing student engagement and enhancing students' covariational reasoning; and (3) promote purposeful, engaged students by drawing connections between students' views of themselves as doers of mathematics, their success in college algebra, and their performance on a covariational reasoning instrument. RMC conducted a mixed-methods evaluation, using analysis of student-level data from sources such as clinical interviews with undergraduates, student performance on a common final exam, and student performance on the covariational reasoning instrument. Formative evaluation components focused on the quality of processes and products and provided ongoing feedback related to growth of participants.

Course-Based Undergraduate Research for All: Preparing the Future STEM Workforce (Arizona State University; 2017-2020). Arizona State University led this IUSE project with a focus on developing course-based undergraduate research experiences (CUREs). The project leveraged the interdisciplinary nature of the School of Mathematical and Natural Sciences in the New College of Interdisciplinary Arts and Sciences that encompasses all of the STEM disciplines. This project created a common course framework applicable to a variety of research topics such as food science, animal population dynamics, mine site remediation, and yeast biology. Project goals were to: (1) develop, implement and assess three high-

impact interdisciplinary CUREs to reach upwards of 100 students a year by the end of the project; (2) develop a universal framework, called the “Common Course Outline”, for CURE classes to standardized teaching of common components of scientific inquiry; (3) incorporate the CURE classes into the degree programs and train and recruit additional faculty to develop and teach interest-specific CUREs, institutionalizing the CURE class; and (4) publish CURE modules for use by the pedagogical community and publish student research results for use by the scientific community. RMC conducted a mixed-methods evaluation, using data from document review, interviews and focus groups, and surveys. Formative and summative evaluation components focused on the extent to which the curriculum was developed as proposed and project goals were met, and impact on project participants.

Integrative Graduate Education and Research Traineeship (IGERT) Program. The IGERT program was developed by NSF to meet the challenges of educating U.S. PhD scientists and engineers who will pursue careers in research and education, with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become, in their own careers, leaders and creative agents for change. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and institutions, by establishing innovative new models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. It is also intended to facilitate diversity in student participation and preparation, and to contribute to a world-class, broadly inclusive, and globally engaged science and engineering workforce.

Resilience and Adaptive Governance in Stressed Watersheds (University of Nebraska-Lincoln; 2009-2015). Based at the University of Nebraska-Lincoln, this project focused on developing the next generation of natural resource scientists, managers, and policymakers by increasing scientific understanding of how resilience—the ability to withstand multiple stresses without losing critical structure and function—is generated in complex systems of people and nature. The project provided cross-disciplinary academic and experiential training for a diverse group of doctoral graduate students in natural, social and computational sciences. RMC conducted a 5-year evaluation of the project. Program impact was assessed through student surveys; interviews and/or focus groups with graduate students, faculty, and staff; and review of course materials and research projects.

Innovative Technology Experiences for Students and Teachers (ITEST). ITEST is an applied research and development program providing direct student learning opportunities in pre-kindergarten through high school in formal and informal settings. The learning opportunities are based on innovative use of technology to strengthen knowledge and interest in STEM and information and communication technology (ICT) careers. To achieve this purpose, ITEST supports projects that engage students in technology-rich experiences that: (1) increase awareness and interest of STEM and ICT occupations; (2) motivate students to pursue appropriate education pathways to those occupations; and (3) develop STEM-specific disciplinary content knowledge and practices that promote critical thinking, reasoning, and communication skills needed for entering the STEM and ICT workforce of the future.

Biomechanics to Offer Diverse Young Minds Opportunities to Develop, Explore, and Learn STEM (BODYMODELS) (University of Nebraska Omaha; 2018-2021). This 3-year ITEST project led by University of Nebraska Omaha investigates a learning model that leverages the technology-rich and interdisciplinary context of biomechanics to enhance understanding of and interest in STEM occupations among students in Grades 3 to 6. This new learning model addresses two key challenges: (1) expanding student interest in STEM careers by engaging them in inquiry-based activities that are relevant to them, and (2) helping teachers customize inquiry-based lesson modules to account for differences in teachers’ biomechanics experiences, students’ backgrounds, school districts, and course objectives. The project is

designed to foster positive perceptions about STEM among participating teachers and students and engage elementary teachers in the Omaha Citywide STEM Ecosystem, establishing long-term professional networks to support their teaching of STEM after the project period. As the external evaluator, RMC is using qualitative data collection and analysis methods to document the processes of BODYMODELS project development, provide formative feedback for improvement, and assess program impacts on participating teachers and students.

Robert Noyce Teacher Scholarship Program. This program provides funding to institutions of higher education to provide scholarships, stipends, and programmatic support to recruit and prepare STEM majors and professionals to become K-12 teachers. The program seeks to increase the number of K-12 teachers with strong STEM content knowledge who teach in high-need school districts. The program funds capacity building, stipend and scholarship, teaching fellow/master teaching fellow, and regional conference projects.

Changemaker K-12: A Digital Platform for Supporting Elementary Teacher Candidates in Teaching Engineering and Human-Centered Design (University of Louisiana Lafayette; 2024 – present). This project is designed to improve the preparation of teacher candidates through a curated collection of thinking routines, hands-on design challenges, and communication exercises designed to empower teacher candidates, educators, and K-12 students. A mixed methods approach is used to analyze program documents, observe program orientation sessions, survey master teaching fellows, and collect input from project leaders through interviews. RMC also evaluates the development and pilot testing of an online platform designed to support pre-service teachers to effectively teach engineering and human centered design.

GeauxTeach Program (Louisiana State University; 2024-present). RMC is conducting the evaluation of the LSU GeauxTeach undergraduate secondary STEM-teacher preparation program to examine the effectiveness of a teacher-development model based on a hierarchy of mentoring, experiential learning, and educational offerings that are integrated with other support structures for STEM learning and teacher development and prepare teachers for high-need settings. The focuses on robust new recruiting efforts, upgrades to undergraduate curriculum, new experiential learning opportunities, and an enhanced induction system to support Noyce scholarship recipients for 2 years. The evaluation is intended to provide a deeper understanding of the implementation and outcomes of the various academic support structures provided by GeauxTeach using data collected from program leaders, faculty, participants, and staff in partner school systems.

Noyce Master Teacher Fellows Project (Utah State University; 2024-present). RMC is conducting the external evaluation of the USU Noyce Track 3 Master Teaching Fellowships (MTF) grant to support teaching excellence in data science and mathematical modeling in rural and Native communities in Utah. The project pairs exemplary secondary school teachers with USU faculty who co-develop and implement math/data modeling investigations adapted to address local needs and develops the capacity of teacher leaders through high quality coursework, professional development, and support in obtaining professional certification. The evaluation uses surveys of MTFs, interviews with project stakeholders, observations of project activities, and document review to examine the implementation and effectiveness of project activities providing summative information about outcomes and formative feedback to guide program improvement.

STEM Graduate Recruitment, Licensure, and Mentorship for Rural Schools (University of Tennessee at Martin; 2023 – present). The project aims to increase the number of highly qualified STEM majors

teaching K-12 STEM in rural areas through multi-faceted and sustainable recruitment and training at UTM with goals of increasing the number of STEM graduates obtaining educator licensure; determining which populations are attracted to the program and the type of advertising or recruiting methods that attract them; ensuring that STEM professionals become highly effective teachers; and having new teachers complete full careers as educators. RMC is using a qualitative evaluation approach, including analysis of program documents, and interviews with project leaders, selection committee members, and scholars.

Equipping STEM Educators to Teach in High-Need Rural Schools (Dordt University; 2023 – present). The project aims to recruit students at K-12 schools through strong professional learning communities (PLCs), increase the number of rural STEM teachers participating in outreach and professional learning activities, and provide high-quality STEM teacher preparation programs that equip teachers to flourish in rural school settings, including preparation to become backbone teachers/leaders upon graduation. RMC is using a mixed-methods evaluation to collect qualitative data from interviews and focus groups and quantitative data from teacher surveys.

Noyce Mathematics Fellows, TeachDETROIT (Wayne State University; 2015-2021). RMC is conducting an evaluation of the Noyce Mathematics Fellows, TeachDETROIT Project, an urban teacher residency program at Wayne State University. Funded through a 5-year grant from NSF’s Robert Noyce Teacher Scholarships and Stipends program, the project provides financial support to teacher candidates to participate in a 15-month preservice preparation program. Graduates receive mentoring during the first 2 years of induction in the profession and those who complete elementary mathematics specialist certificates receive additional stipends during their induction. The mixed-method evaluation uses interviews and focus groups, surveys, and document review to examine project development, institutional partnerships to support collaborative work, and outcomes for participating Mathematics Fellows, their mentors, and the elementary and middle school students they serve.

Noyce Scholars: Preparing STEM Teachers to Serve in High-Need, Rural School Districts (Dordt University; 2017-2022). RMC is working with Dordt University to evaluate this Noyce Scholars project focused on recruiting and training high-quality STEM teachers to serve high-needs rural local schools and districts. The project will provide: (1) scholarship and cohort experiences for STEM education students, and (2) recruitment experiences for K-12 and college students to support the growth of a strong professional learning network. The evaluation involves a longitudinal design using a combination of qualitative and quantitative methods to document changes and activities undertaken as part of the project. RMC works with the leadership team to support the use of evaluation data in long-term planning and guidance.

Longitudinal Evaluation of Noyce Science Teachers to Determine Sources of Effective Teaching (LENST) (University of Nebraska-Lincoln, 2015-2020). LENST is a Track 1, Phase 2, Noyce project at the University of Nebraska-Lincoln that built on a well-established Masters in Science Teaching program established through a Noyce Track 1, Phase 1 project targeting science majors who completed an undergraduate program and are looking to become teachers through a career change or an extension of their undergraduate experience. RMC led the mixed methods external evaluation to provide formative and summative feedback to project staff around the extent to which research questions were addressed appropriately and dissemination efforts reached intended audiences.

NebraskaMATH Omaha Noyce Partnership (University of Nebraska Omaha; 2014-2020). Led by the Omaha Public Schools and the University of Nebraska Omaha (UNO), this Noyce Scholarship Track Phase I program addressed the national need for more underrepresented STEM talent who pursue careers in

teaching. This scholarship program was designed to develop highly skilled secondary mathematics teachers committed to teaching in high-need schools by providing targeted support for students enrolled in and graduating from UNO's Bachelor of Science in Mathematics/Teacher Preparation program. The program included new coursework and complements existing pathways that were developed by the UNO mathematics and education faculty in collaboration with school district partners. All of the students supported by the project were enrolled in this new program and received focused training and extensive fieldwork in the Omaha Public Schools to prepare them for teaching careers in high-need schools, including instruction in inquiry-based learning and other culturally responsive pedagogies. RMC conducted a mixed methods evaluation, using data from document review, interviews and focus groups, and surveys to examine if this program was developed as proposed and project goals were met, and the extent to which this program prepared students to be effective secondary mathematics teachers.

Louisiana State University (LSU) NOYCE TIGERS: Teaching Investigating Guiding Engaging Researching Serving (Louisiana State University; 2014-2015). The GeauxTeach program at LSU allows students to pursue undergraduate mathematics and science majors to simultaneously obtain a secondary teaching certification in Louisiana and become highly-qualified teachers with a secondary education concentration. Between 2009/10 and 2013/14, Noyce TIGERS provided financial support to students participating in GeauxTeach. RMC conducted an evaluation of Noyce TIGERS, focused on describing the characteristics and outcomes of project graduates relative to prior project graduates, GeauxTeach graduates who did not receive Noyce scholarships, and a comparison group of mathematics and science teachers in Louisiana. Data sources included LSU graduate records, data collected from the Louisiana Department of Education (LDE), publicly-available school data, and a short online survey emailed to project graduates. Outcomes examined included graduate placement and retention in schools that serve high concentrations of economically-disadvantaged and low-performing students and teacher value-added model (VAM) scores.

Midwest Regional Robert Noyce Connections: Building Communities of Practice (University of Nebraska-Lincoln; 2014-2015). The Noyce Connections project sought to increase connections among Midwest Noyce project stakeholders, using new and/or strengthened connections to share expertise and knowledge across projects, supporting the professional development of Noyce Scholars, and building communities of practice. The University of Nebraska-Lincoln hosted an annual conference in 2014 and 2015, and the collaborating team worked to provide webinars, workshops, and other events throughout the year. RMC conducted the external evaluation, focusing on participant satisfaction related to project activities (trainings, webinars, conference) and documentation of changes in the number of connections across university-related Noyce personnel, K-12 Noyce Teacher Scholars, and conference participants. RMC also worked with the leadership team to support needs assessment and use of evaluation data in long-term planning. Annual reports outlining impacts and recommendations were provided to support continuous improvement. A final report documented progress toward goals, highlighting professional development opportunities and successful networking connections.

NSF Research Traineeship (NRT). The NSF Research Traineeship (NRT) program is designed to explore ways for graduate students in research-based master's and doctoral degree programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers. The program is dedicated to effective training of STEM graduate students in high priority interdisciplinary or convergent research areas, through a comprehensive traineeship model that is innovative, evidence-based, and aligned with changing workforce and research needs.

Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) (University of Nebraska-Lincoln; 2017-2022). This 5-year NSF Research Traineeship (NRT) project establishes a new graduate training program that focuses on understanding the resilience of agricultural systems. Nebraska's agricultural system in the Platte River Basin is of economic, social and natural value; but the river basin's ability to resist damage from outside threats (e.g., pollution, pest, drought) and recover rapidly is unknown. The training program examines resilience of agricultural landscapes through the disciplines of agronomy, natural resources, computer sciences, engineering, and public policy. The project anticipates training students in the following disciplines: natural resources, environmental science, agronomy, entomology, plant sciences, geosciences, biosystems engineering, computer science, and public policy. Trainees will engage with external partners from the agricultural industry, government agencies, and other organizations that have an interest and stake in maintaining productive agricultural systems. It is anticipated that the training will help develop a workforce and agricultural industry better capable of managing future demands on food, energy, and water systems. RMC is conducting an external evaluation that includes data collected through surveys, interviews, focus groups, and project materials, and is working with the project leadership team to support the use of evaluation data in planning and implementation.

Math and Science Partnership (MSP) Program. The NSF Math and Science Partnership (MSP) program was a major research and development effort that supported innovative partnerships to improve K-12 student achievement in mathematics and science. MSP projects were expected to raise the achievement levels of all students and significantly reduce achievement gaps in the STEM performance of diverse student populations. MSP projects were also designed to serve as models that have a sufficiently strong evidence/research base to improve STEM education outcomes for all students.

Louisiana Math and Science Teacher Institute (LaMSTI) (LSU; 2009-2015). LaMSTI was led by LSU and funded as an Institute Partnership through the NSF's MSP program. The project was designed to establish a professional master's degree program to develop science and mathematics teacher-leaders and to create new job categories and career paths to put graduates to work among classroom teachers to increase student learning. RMC conducted the external evaluation to measure progress toward LaMSTI goals and objectives, providing evidence of project impact and generating formative feedback about project strengths and areas for improvement. The evaluation included analysis of data from participant surveys and content knowledge assessments in mathematics and science; course evaluation forms; interviews and focus groups with participants, project staff, and school administrators; observation of LaMSTI courses and participant classrooms; document review; and student achievement data. The evaluation team collected data from participating teachers, school and district administrators, institutions of higher education faculty, and project leaders and staff. Quantitative data collected via survey and content assessments were analyzed using repeated measures tests to examine change over time for participants. Qualitative data collected through interviews, focus groups, observations, and document review were used to validate and extend understanding of other evaluation data sources.

Technical Evaluation Assistance in Mathematics and Science (TEAMS) (NSF; 2013-2016). RMC led the TEAMS project which supported the mission of the NSF Research, Evaluation, and Technical Assistance (RETA) program by discerning significant issues that hinder the work of evaluators of Math-Science Partnerships (MSP) projects, offering technical assistance to resolve these issues, and providing venues for MSP evaluators and project staff to share strategies and findings from MSP evaluations. The project benefitted the evaluations of MSP projects funded by NSF and the U.S. Department of Education (USDE) through examination of the evaluation designs, review of the data collection instruments, assistance choosing appropriate methodology, and to support project evaluations at multiple levels. The TEAMS

project utilized multiple strategies to identify challenges and needs, including reviewing evaluation plans and annual reports, reviewing queries evaluators submitted through a Help Desk service, and convening meetings of MSP evaluators. The long-term goal of the TEAMS project was to strengthen the quality of MSP project evaluation and build the capacity of evaluators by strengthening their skills related to evaluation design, methodology, analysis, and reporting. The objectives of the TEAMS project were to (1) facilitate increased opportunities for networking among evaluators; (2) provide increased access to measures and instruments; (3) foster increased rigor and sophistication of evaluation methodology by promoting reflective practices; (4) provide increased access to relevant research; (5) foster increased understanding of evaluation design and implementation; and (6) strengthen the role of evaluation as a means of improving project effectiveness and contributing to the knowledge of the field.

Nebraska Partnership Teaching to Enhance Achievement in Math and Science (TEAMS). (2016-2018; University of Nebraska-Lincoln). RMC served as the external evaluator for the NE TEAMS project. In partnership with high-need schools across Nebraska, and in close consultation with the Nebraska Department of Education content specialists, Nebraska Partnership TEAMS provided mathematics and science professional development to K-12 teachers through summer and academic year sessions and supported a professional network of mathematics and science teachers. The project also provided professional development activities for school administrators focused on understanding best-practices in mathematics and science teaching. The evaluation examined progress towards goals for the three programs: the Elementary Integrated STEM program (Grades K-5), Secondary Earth and Space Science program (Grades 6-12), and the Secondary Mathematics Institute (Grades 7-12). The evaluation included analysis of teacher content knowledge inventories and surveys, onsite observations of professional development activities, and focus groups and interviews with project stakeholders.

NebraskaMATH. (2009-2014; University of Nebraska-Lincoln). NebraskaMATH was a Targeted Mathematics Science Partnership funded by the NSF. The goal of the project was to improve mathematics achievement for all students and narrow student achievement gaps by providing educator professional development focused on three key transition points: the mathematics education of children in transition from Kindergarten through early primary to Grade 3; algebra at the transition from middle to high school; and the transition of beginning secondary mathematics teachers from certification to the classroom. Core partners included the University of Nebraska-Lincoln, four school districts (Grand Island, Lincoln, Omaha, Papillion-La Vista), and Educational Service Units. RMC served as the project evaluator using a mixed-methods approach to document progress towards goals and provide feedback for improvement. Evaluation activities focused on: (1) Primarily Math, a three-tiered initiative designed to strengthen mathematics education in the early grades, (2) Nebraska Algebra, a 1-year, 9-credit hour graduate education program designed to help Algebra I teachers improve content knowledge and strengthen pedagogical practices to help all students entering high school succeed in Algebra I, and (3) the New Teacher Network, a 3-year mentoring and 24-credit hour graduate education program for newly certified secondary mathematics teachers designed to help them become highly effective and committed to the teaching profession.