



COLLEGE OF EDUCATION ENGAGEMENT REPORT 2020

PURDUE UNIVERSITY
COLLEGE OF EDUCATION



College of Education

FOREWORD

We are committed to making the College of Education an equitable and welcoming environment for all. We are taking steps toward making the College and the campus more welcoming, tolerant, and inclusive, with focus on the recruitment and retention of historically underrepresented students.

The College of Education acknowledges that Purdue University is located in the traditional homelands of the Woodland People. We honor and appreciate these indigenous caretakers which include the Bodéwadmik (Potawatomi), Lenape (Delaware), Myaamia (Miami), and Shawnee people. This acknowledgement shall be used by faculty, staff, and students at their discretion.

**DR. NANCY MARCHAND-MARTELLA
SUZI AND DALE GALLAGHER DEAN,
COLLEGE OF EDUCATION
PURDUE UNIVERSITY
WEST LAFAYETTE, INDIANA**

COLLEGE OF EDUCATION ENGAGEMENT REPORT – 2020 YEAR



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COLLEGE OF EDUCATION ENGAGEMENT REPORT – 2020 YEAR

Purdue’s College of Education is dedicated to launching the future through the discovery and development of human potential. That’s a lofty vision, yet one that equitable access to education can make possible. Through our research, scholarship and teacher preparation, we work to effect positive change and transform the lives of learners of all ages and ability in a variety on contexts both formal and informal. For nearly 110 years, we have seen that vision become reality – and realize that even as much is accomplished, there remains much to do. With respect to our engagement and impact as we meet the land grant mission of Purdue University, it is important to note that approximately 80% of our teacher education graduates choose to remain in Indiana, working as education professionals, including teachers and administrators.

The mission of the College of Education at Purdue University is to:

- Advance scientific discovery related to learning and human development.
- Prepare outstanding teachers and intellectual leaders to thrive in a pluralistic society.
- Maximize educational outcomes through inspired teaching, research, and public service.

To further its mission the College of Education strives to:

- Create a culture of discovery.
- Deliver an innovative and responsive professional curriculum.
- Empower faculty, staff, and students to effect positive change in a diverse society.
- Engage in cross-disciplinary collaboration to address critical educational challenges at all levels.
- Inform educational programs and policy.
- Attract and retain stellar, diverse faculty, staff, and students.

Goals are:

- Foster research and scholarship that creates knowledge and transforms the practice of education.
- Strengthen educational programs that prepare outstanding professionals.
- Build P-12 partnerships that reflect a shared, collaborative vision and commitment to excellence in teaching and learning.
- Model the inclusiveness of diverse ideas, cultures, and people.
- Improve faculty and staff development, retention, and support.

P-12 Schools

- **Clinical Partnerships:** Program faculty and our P-12 partners work together to design, implement, and evaluate candidates' field experiences and clinical practice. Program faculty and school partners design and implement a unique set of course-related field experiences that allow candidates to apply and reflect on content, professional knowledge, pedagogy, content pedagogy, and professional dispositions throughout the Teacher Education program. Field experiences that are connected to foundational courses allow candidates to observe in-service teachers and assist with basic instructional tasks. As candidates gain more experience working in classroom settings, their fieldwork and clinical practice spiral to match.

Purdue has multiple partnerships within the local area, the state, and nationwide. The standard agreement and partnership is articulated through our Affiliation Agreement. This document details the roles of both the Office of Clinical Practices and the partner school corporations. Purdue ensures mutually beneficial partnerships in a variety of ways. The tuition credit voucher program is in its twenty-sixth year. It is a way of saying "thank you" to school corporations for the mentorship they provide to Purdue students in early field experience courses. A tuition credit voucher allows a teacher to take a class at Purdue for free.

To ensure close relationships and participation in the assessment and decision-making process of clinical experiences, the COE sponsors the Teacher Education Advisory Board (TEAB). The charge and design of this board is outlined below:

Purpose of Advisory Board: to participate in and collaborate with the Teacher Education Program (TEP) at Purdue on decisions related to the development, implementation, and revision of its programs and operations, particularly clinical partnerships and practice to ensure P-12 student learning.

- **The Susan Nierstheimer Memorial Book Fund:** Due to COVID issues, books were not donated to students for 2020. However, donations resume for 2021. During the spring of 2019, 274 students from seven central Indiana elementary schools were beneficiaries of the Susan Nierstheimer Memorial Book Fund. First graders who had participated in school-based reading intervention programs each received books to recognize their progress and encourage them to continue to develop their reading skills. The books are purposefully chosen from children's literature to facilitate the students' progress. There is one book that the students can read easily, two chapter books that provide some challenge, and one advanced book to share with an adult, into which a student can grow. Books were presented in the familiar bright blue bag imprinted with the book fund logo. Each book includes a custom bookplate with the following inscription: "A gift for you from the Susan L. Nierstheimer Book Fund. Fulfilling a dream by putting books in the hands of children." In the past eleven years through 2019, the college has distributed 9,588 books to 2,397 deserving students through the book fund. This legacy continues to grow as we keep fulfilling Susan's wish to put books into the

hands of children. We are ever grateful for your support of the College of Education's mission to, "launch the future through the discovery and development of human potential."

Bolshakova, Virginia, Indiana Gear Up (<https://www.purdue.edu/indiana-gear-up/>), Indiana Teachers/schools.

- Indiana GEAR UP, STEM Camps & STEAM Leadership Institutes for Youth, Pre-service Teachers, & Indiana Teachers / summer 2017 – present a placed-based series of STEM-focused summer camps. Themes and curricula have included: Exploring Your Environment, STEM Innovation Camp, and the Coupled Human and Natural Systems (CHANS) Focused STEAM Leadership Institute. Students and teachers participate in the teaching and learning, as well as collaborators from San Jose State University and Massachusetts Institute for Technology (MIT).
- Afterschool STEM Clubs and Maker Spaces / September 2017 – present. Bolshakova led the creation, implementation, and on-going development of STEM-focused afterschool programs and clubs across the entire IN GEAR UP state network (24 middle schools & 11 high schools). We are achieving 5-15% student participation at each grade level and teachers are getting trained on a variety of STEM focused curricula and tools that are getting integrated into the classroom.
- 2019 Themes: 'Focus, Coherence, Rigor' These TWO-DAY Secondary STEM Teacher Professional Development Workshop Series that addresses state standards and assessment, ACT/SAT Preparation, College & Career Integration, Inquiry-based Math & Science Activities and Discourse (Asking the Right questions.)
- University of California Master Beekeeper Short Course – Working Your Colonies - Lectures and hands-on exercises – for novice beekeepers who already have a colony and/or have taken the previous "Planning for Your First Hives" course, and want to develop their beekeeping skills further. Products of the hive, and lectures inspecting the colony and solving problems with the colony are all discussed and followed up with field-based activities in the apiary. This training and program continues.
- Healthy Living Ambassadors: Nutrition & Fitness in the Garden - A 'Teens as Teachers' modification and adaptation of garden-enhanced nutrition and physical education curriculum (e.g. Jr. Master Gardeners) for upper elementary students delivered by teens in the afterschool program setting. This training and program continues.
- Shape Robotics Fable Unit Professional Development at Warren Central Career & Tech Center, November 2, 2019 (62 teachers attended)
- Indiana GEAR UP Professional Staff Retreat and Intercultural Development Inventory Training, August 6-7, 2019 (13 staff attended)
- Personal Food Computer Joint Training with MIT's Open Ag Initiatives, July 18, UC Santa Cruz Center for Sustainable Food Systems and Agro ecology (18 staff attended)
- Annual Summer Math & Science Professional Development Workshops, 2-day comprehensive workshop for secondary teachers across Indiana, May – July, Eight, two-day workshops, Summer 2019 – present (170 teachers attended)

- Annual Indiana GEAR UP Building Coordinator Training, developed and delivered 2-day comprehensive workshop for GEAR UP staff and teachers, July 2018 – present (30 teachers and program coordinators per year)
- Annual Greater Clark Community Schools, STEAM Leadership Institute 2019, STEM Innovation Camp 2018, developed and delivered a series of three, weeklong STEM focused camps June – ongoing (75 students per year)
- Annual Crawford County Schools, STEAM Leadership Institute 2019, STEM Innovation Camp 2018, developed and delivered a series of three, weeklong STEM focused camps June 2018 - ongoing (15 students)
- Monthly engagement with the Indiana Commission for Higher Education developing ongoing partnership and collaboration between Purdue and CHE (2017-present)
- Crawford County Community Schools, Crawford Co Middle & High Schools Afterschool STEM program support, sustained PD, 2017- present (3 teachers/30 students).
- Gary Community School Corporation, Westside Prep High School and Gary Middle School Afterschool STEM program support, sustained PD, 2017- present (3 teachers/45 students/week)
- Greater Clark School Corporation, Charlestown Middle & High School, Parkview, and River Valley Middle School, Jeffersonville High School Afterschool STEM program support, sustained PD, 2017- present (6 teachers/120 students/week)
- Indianapolis Public Schools, H. L. Harshman Magnet Middle School, Arsenal Tech High School, Purdue Polytechnic High School Afterschool STEM program support, sustained PD, 2017- present (4 teachers/75 students/week)
- Kokomo School Corporation, Maple Crest Middle School Afterschool STEM program support, sustained PD, 2017- present (2 teachers/60 students/week)
- Lafayette School Corporation, Tecumseh Junior High Afterschool STEM program support, sustained PD, 2017- present (2 teachers/35 students/week)
- Maconaquah School Corporation, Maconaquah Middle & High Schools Afterschool STEM program support, sustained PD, 2017- present (2 teachers/35 students/week)
- Metropolitan School District of Warren Township, Creston Middle School Afterschool STEM program support, sustained PD, 2017- present (2 teachers/60 students/week)
- Muncie Community Schools, Muncie Central High School, Northside & Southside Middle School Afterschool STEM program support, sustained PD, 2017- present (4 teachers/60 students/week)
- Community Schools of Frankfort, Frankfort Middle School Afterschool STEM program support, sustained PD, 2017- 2018 (3 teachers/30 students)
- Organized, developed, and delivered first ongoing, annual professional development series for 4-H Volunteer Educators, sustained PD, 2014- present (80 educators/attendees)
- Needs-assessment and evaluation of the IN GEAR UP Out-of-School Programs (2017 - present) funded through US Department of Education GEAR UP, examination of characteristics of effective and sustained out-of-school STEM programming, partnerships, STEM professional development programs.
- Evaluation of Teacher and GEAR UP staff Professional Development Workshops including knowledge gains, application, and tool adoption.

- Overhaul of entire GEAR UP Program Delivery to provide Hybrid options for student support, classroom level support, teacher Professional Development trainings, how to meet and conduct meeting business in COVID world.
- Bolshakova, V. L. J. (Developer, WebMaster) (July 2017 - ongoing) Indiana GEAR UP: Out-of-School Time Learning Collaborative Tool Site & GEAR UP INTRANET. Website sites.google.com/view/ingearupost/home (As of January 27, 2021: 503 unique users, 6,970 Pageviews, 2,724 Sessions, Source Google Analytics)
- Creation of Indiana GEAR UP YouTube Channel, https://www.youtube.com/channel/UCELZ4iHMDER_FFB1Gp9JOPA , 189 Subscribers, 62 videos, 1176 views since April 2020

Bofferding, Laura and Kastberg, Signe, Faculty in Math Education, due to COVID, Family Math and Science Night for spring 2020 was cancelled, while Family Math and Science Night for fall 2020 was not scheduled. Typically, faculty design lessons for the elementary mathematics methods course to help pre-service teachers (PSTs) promote curiosity and wonder in the family math and science night activities. Teachers in the partner schools provide feedback on the activity plans, and PSTs run the activities at family math and science nights at the school.

Bryan, Lynn, Faculty in Physics Education and Director of CATALYST

- **Provost Fellow for Engagement/Faculty Fellow for K-12 STEM Engagement.** Dr. Bryan served as a Provost Fellow for Engagement for the first 6 months of 2020 and a Faculty Fellow for K-12 STEM Engagement during the second 6 months of 2020. As a Provost Fellow/Faculty Fellow, she participates in Provost Cabinet meetings, Engagement Associate Deans meetings and Engagement Council meetings. Currently, she is working with Associate Dean Steve Abel to engagement initiatives, develop systematic and efficient mechanisms for information gathering and communication to (1) increase Purdue's impact on PK-12 STEM education in Indiana and beyond; (2) support and diversify the pipeline into STEM majors (and ultimately STEM careers), particularly in Indiana; (3) enhance our capacity to secure federal funds for project involving STEM engagement; and (4) encourage faculty and student participation in PK-12 STEM engagement initiatives.
- **Teacher Professional Development and Classroom Implementation of Modeling Based Inquiry Science Unit for *Sensing Science through Modeling Matter*.** Partnership with the state of Indiana. Professional development for teaching states of matter and phase changes using modeling-based, discourse rich science instruction that includes iPads and a tool called the Thermoscope. Teachers received professional development in science content as well as the pedagogical content knowledge for teaching the unit. In addition, teachers taught the unit over the course of 6 weeks in their Kindergarten classroom, while my team provided materials set-up, instructional coaching, and just-in-time teaching support.
- **Teacher Professional Development for *Integration of Engineering Design and Life Science: Investigating the Influence of an Intervention on Student Interest and Motivation in STEM Fields*.** In this project, we provide long term professional development on project-constructed, PBL-based, integrated STEM units to allow middle school science teachers to meaningfully integrate engineering in their life

science classes and support teachers as they implement the STEM units during the academic year. A partnership with Tippecanoe School Corporation, Community Schools of Frankfort, Anderson Community Schools, Rossville Consolidated Schools.

- **Teacher Professional Development for *Building Excellence in STEM Teaching through Inquiry* (BESTI).** This project involved a research-based, three-month intensive professional development program aimed at enhancing teachers' knowledge and skills for teaching inquiry-based science and mathematics that integrates argumentation from evidence. The project has three major objectives: 1) enhance teachers' science and mathematics content knowledge beyond the level that are expected to teach; 2) increase teachers' knowledge and practice of research-based, argument-driven inquiry-based pedagogical methods; and 3) enhance teachers' capacity to be reflective practitioners.
- **Planning and Implementation of *Indy STEM Teacher Residency with Indianapolis Public Schools*.** This \$5.1 million project, funded by the U.S. Department of Education, is a collaborative partnership between Indianapolis Public Schools (IPS) and Purdue University. The overall vision of *Indy STEM Teacher Residency* (ISTR) is to strengthen the educational outcomes of students in the largest urban school district in Indiana, IPS, by preparing culturally competent, highly qualified career STEM teachers who will elevate student achievement in middle and high school science (including computer science), technology, engineering, and mathematics. In 2020, she collaborated with colleagues from IPS to design foundational components of the initiative—e.g., the residency structure within IPS classrooms, PLC meeting, recruitment of the first cohort, etc.
- **Building a STEM Education/Engagement Partnership with Grand Universe.** In 2020, she began collaborating with Greg McCauley, COE of Grand Universe (granduniverse.org) to conceptualize and build a Purdue University/Grand Universe partnership that aims to advance the teaching and learning of STEM by creating a joint platform in which we offer access to a variety of strategically developed, innovative, interactive, and research-based educational STEM programs and resources. To date, we have been engaged in a “strategic doing” process to launch the collaboration—specifically, conceptualizing and initiating several projects that leverage the strengths of each partner organization and the immediate resources available to us. These initiatives include: (1) creating an identity for the collaboration, (2) producing vlogs/ video podcasts, (3) developing educational programming, and (4) seeking external funding. (see <https://www.youarecurrent.com/2021/01/06/sky-is-the-limit-grand-universe-purdue-partnership-has-successful-launch/>)

Capobianco, Brenda, Faculty in Science Education

- Collaborate with faculty from Tufts University, Boston University, Arizona State University, and American University to develop new principles and practices for integrating engineering design in elementary science teacher preparation programs.
- Facilitated a two-day SLED Orientation Workshop for 11 Lafayette School Corporation Sunnyside teachers for their 550 students on using engineering design to foster three-dimensional learning in STEM education.

Case, Amanda, Faculty in Counseling Psychology

- Spencer Foundation and Kinley Trust. As part of the Spencer Foundation and Kinley Trust projects, developed collaborative partnerships with 13 community-based college access and success programs across the country, all of whom she has visited in person by January 2020. These partnerships will serve as the foundation for current and continued collaboration.
- Mental health consultation at YMCA Camp Tecumseh. In 2019 YMCA Camp Tecumseh solicited assistance designing a mental health support program for their summer camp counselors. In partnership with Tecumseh and alongside Purdue counseling psychology doctoral students, Dr. Case designed a mental health consultation model that was implemented and tested in Summer 2019. The collaboration continued in 2020 but the model was not implemented in Summer 2020 due to COVID. The model will be implemented again in 2021.

Guzey, Selcen, Faculty in Biology Education

- BESTI Workshops (2020) Worked with 40 elementary and middle school STEM teachers from West Lafayette/Lafayette area schools. BESTI involved 3 professional development (PD) workshops and 2 Professional Learning Communities (PLC) meetings, that provided practicing K-8 science and mathematics teachers an enhanced understanding of both the subject matter knowledge and pedagogical skills for teaching inquiry-based, argumentation-rich science and mathematics.
- Co-designed (with Dr. Bryan) the second STEM Kids Conference in spring 2020 - Canceled due to COVID.
- LifeSTEM: Integration of Engineering Design and Life Science: Investigating the Influence of an Intervention on Student Interest and Motivation in STEM Fields. This project provides professional development for middle school science teachers. The project curriculum unit have been implemented by 35 teachers. Through the professional development activities and the curriculum units, we have reached over 5000 students. Anderson and Tippecanoe school corporations.

Morita-Mullaney, Trish, Faculty in Literacy Education

- Extended teacher cohort model for ELL and DL licensure with the Indiana Department of Education leading to enrollment of new educators throughout the state (Impact: \$618,750.00 for 2020-21 school year, 14 districts and 120 teachers), lead applicant and supervisor.
- Indiana Dual Language Immersion Network: Collaborates with IDOE dual language leaders and district and school administrators on implementational challenges as Indiana programs are new and developing. She has conducted various sessions for DLI leaders and stakeholders, presenter and facilitator.
- Indiana Department of Education English Learner Leadership Group: Furnish interpretation and implementational challenges for their ELLs student community, shaping Indiana educational and language policy. Further, it has increased enrollment in the ESL licensure program at Purdue, presenter and facilitator.
- Wabash Valley Educational Service Center: Continued advisement with the Wabash Valley Education center to identify the educational needs of ELLs in consortium schools, facilitator.

- **Professional and Parental Understanding for Equity in Dual Language Education (PUEDE) and Leveraging the Lectura y Lenguaje [Literacy & Language]: A Collaborative Scale Up of Literacy and Language for ELs in Central Indiana**
<https://puede.education.purdue.edu/> PI Partnership with 5 school districts across the state to improve instruction in English Language Learner (ELL) and Dual Language Bilingual Education (DLBE) classrooms for emergent bilingual students by providing teacher training leading to state ELL licensure (PUEDE and Leveraging) and a graduate certificate in DLBE (PUEDE).
 - Lafayette School Corporation
 - Logansport Community School Corporation
 - Metropolitan School District of Lawrence Township
 - Goshen Community Schools
 - Community Schools of Frankfort

Rodriguez, Alberto, Faculty in Elementary Science Education

- STEM Workshop for Costa Rican Teachers: Conducted a workshop on STEM and cross-cultural education sponsored by the Costa Rican Ministry of Education and the US Embassy in Costa Rica. A total of 223 teachers from across the country participated on this workshop. Fall 2020
- STEM Workshop for Science Fair Coordinators: Co-lead a workshop with colleagues from the University of Costa Rica on STEM and cross-cultural education for 17 science teachers involved in organizing science fairs in the country. Fall 2020

Shepardson, Daniel, Faculty in Science Education

- Collaborator, Indiana Department of Education, Purdue Climate Change Research Center and College of Science partnership on the development of IDOE's new Climate Change Education Framework (2020). The framework offers scientifically curated instructional resources to educators interested in infusing climate change into their curriculum. Collaborating in the fall of 2020, IDOE and Purdue partners began curating resources that assist educators with teaching climate change while intersecting with existing Indiana Academic Standards for science. IDOE pulled from their published work, Shepardson and Hirsch (2019), that outlines five critical climate change topics to provide the scientific foundation for continued learning. A two-day virtual workshop was also implemented that worked with Indiana educators to identify relevant state academic standards and associated learning resources aligned with the five climate change concepts.
- Advisory Board, BSCS, middle school climate change curriculum development project (2020-23). Participated in several virtual meetings and provided feedback and guidance on the development of the curricular framework and curriculum for the Weather, Climate & Water Cycling unit.
- Advisory Board (2019-20). Sustainable Food Systems project. National Institute of Food and Agriculture, U.S. Department of Agriculture, North Central Region SARE program, project number GNC18-256.

Wessel Powell, Christy, Faculty in Literacy and Language

- Collaborated with Fairview Elementary school stakeholders (PTO members, principal, vice principal, social worker), Bloomington Housing Authority public housing director and parent representatives, and the Banneker Community Center director to conceptualize and design an Equity Hub infrastructure and related community-based school equity initiatives and partnership activities. This collaborative planning is related to the following grant application, currently under review, intended to support:
 - Spencer Foundation Research Practice Partnership, 3 years (2021-2023); \$400,000. *Hearts and Minds Campaign for Equity Hub*. My Role: PI, responsible for 33%, in collaboration with Indiana University, University of South Florida, and community partners. 2020.

Wright, Wayne, Associate Dean for Research, Graduate Programs, and Faculty Development

- Collaboration with Purdue Polytechnic Institute to create the Purdue Polytechnic High School Collaborative Grant Program
- Professional and Parental Understanding for Equity in Dual Language Education (PUEDE) and Leveraging the Lectura y Lenguaje [Literacy & Language]: A Collaborative Scale Up of Literacy and Language for ELs in Central Indiana Co-PI (details under PI Morita-Mullaney in P-12 Schools section)

Xin, Yan Ping, Faculty in Special Education

- Conceptual Model-based Problem Solving (COMPS): A Response to Intervention Program for Students with LDM. LSC, one school – 21 elementary students with LDM involved in the intervention program. 2015-2020

Signature Programs and Centers

Gifted Education Research and Resource Institute (GER²I)

GER²I's mission is holistic development of giftedness, creativity, and talents among individuals throughout their life span. GER²I delivers enrichment programs for gifted, creative, and talented youth; graduate programs for future scholars and leaders; professional development and coursework for educators of gifted, creative, and talented students and cutting-edge research in psychology and education related to giftedness, creativity, and talent development.

GER²I's strategic plan area of engagement focuses on the intention to: **Build educational and financial partnerships to effectively meet the local, state, national, and global challenges in development of giftedness, creativity, and talent.** Highlights of the four engagement goal results are shown below.

Engagement 1. Establish and support exemplary talent development experiences for P-12 students and educators (innovative strategies to enhance academic and affective development; PD to GER²I program staff; secure DIGS funding; GER²I visibility;)

- HOPE+ grant activities, e.g., Jen, E., Moon, S., & Gentry, M. (in press). Incorporating an affective model into a diverse summer program for gifted, creative, and talented youth: A Design-Based Research study.

- Graduate assistants continue to be involved in program delivery.
- We have a continued Shell partnership in Chicago with the Murray Language Academy, and we were able to extend STAR/PULSAR scholarships to participants due to the Haviland Whiting Scholarships.
- Engaged in MOOC development and delivery.
- Enacted the Jean and Ruben Peterson GER²I Fund, and endowment to fund youth programs for twice exceptional students.

Engagement 2. Expand, state, Native American, and international components in programs and research (partnerships, active in organizations/agencies)

- Formalized partnership with Sault Ste Marie Ojibwe, but had to cancel all activities for 2020, due to Covid.
- Formalized partnership with Korean Department of Education, proposed professional development institute at the request of Busan Metropolitan City Institute for Gifted Education and Promotion
- Current Partnerships:
 - Arizona: Ganado, Lukachukai, (Navajo Nation)*, Arizona State University*, Young Scholars Academy
 - Belgium: Flanders
 - Brazil: State University of Sao Paulo, UNESP; Sao Jose do Rio Preto
 - Chile: Catolica University Norte*, Antofagasta; Universidad de Los Andes, Santiago
 - China: Beijing Hope Star (Xiaodong); Jiangsu Tianyi High School, China; RDFZ School (Beijing); HiElites (USA & Guangzhou Province)
 - Colombia, Ruta N, Medellin; Columbus School, Envigado; Secretary of Education, Medellin; Nationale University of Colombia
 - Greece, Thessaloniki
 - Illinois: Morton Grove; Murray Language Academy*
 - India through www.ei-india.com
 - Indiana: Attica*, Benton County*, Blue River Valley*, Brownsburg, Cedar Lake, Crawfordsville*, Danville*, Delphi*, Evansville, Frankfort*, Hamilton Heights, Indianapolis, Lafayette*, Tippecanoe County*, Tipton, West Lafayette*
 - Jordan: Yarmouk University
 - Korea: Korean Science Academy; Korean Academy for Gifted Education; Gwangju Science Academy, Korea; Korean Department of Education, Soonchunhyang University
 - Michigan: Bahweting Anishnabe Public School Academy, Sault Ste. Marie*; Downtown Boxing Gym, Detroit*
 - Minnesota: Mille Lacs Band of Ojibwe*
 - (The) Netherlands: Radboud University
 - New Mexico: Navajo Prep, Farmington; San Juan College High School
 - South Dakota: McLaughlin (Standing Rock Reservation)*
 - Spain: Campion International
 - Texas: Houston Independent School District
 - Tennessee: Memphis, REACH; Nashville, Vanderbilt University*
 - Saudi Arabia, Mawhiba International Programs
 - TSCG sites in GA, IA, IL, IN, MN, NE, OH, SC, WI*

Note. * Indicates research *and* engagement partnership

Engagement 3. Develop cross-cultural materials and workshops related to GCT studies
(diversity training for staff and students; focus on underserved populations and talent development)

- MCA-Arabic validation study published and it has been translated into Spanish and is being translated into Turkish.
- TSCG is in Arabic. HOPE scale in Arabic
- Presenting Access Denied pre-convention at NAGC virtually in 2020. Selected to present Ability Testing as feature at NAGC.
- MCA-Korean; SPOCQ-Korean; LSI-Korean; MCA-Chinese; SPOCQ-Chinese, HOPE Scale-Korean (See Appendix E).
- HOPE+ Scale and Technical Manual are being used and presented by others, as well as translated and validated in Spanish.
- Certificate in Gifted, Creative and Talented Studies is in full operation, and is well-subscribed with our largest enrollment in 540 ever this fall.

Engagement 4. Emphasize talent development of P-12 students and their educators in Indiana

- Sponsor Hazel Feldhusen Classroom Teacher Award at IAG each year.
- GER²I graduate students serve as TA in undergraduate programs in Purdue teacher education.
- Formal professional development in 2019 in Morton Grove, IL and local schools (not including TSCG sites).
- Kristen represents GERI well in Indiana and at Purdue as follows
 - Board of Directors, Indiana Association for the Gifted, summer 2019 - present
 - High Ability Virtual Learning Task Force, Indiana Department of Education, fall 2020 - present
 - School Counselor Praxis Score-setting Study Participant, Indiana Department of Education, fall 2020
 - Purdue College of Education Teacher Preparation Program Reform Work Group, June 2019—present
 - Faculty Preceptor, Purdue Honors College, fall 2020 - present
 - Purdue University Libraries Committee Member, June 2019 – present
 - Purdue College of Education/EDST Department Representative, Curriculum Committee Member, fall 2018 – present
- GER²I faculty and staff frequently speak to groups about GCT
 - Marcia, Ophelie, and Alissa are working with a school in Danville, IN.

Center for Advancing the Teaching and Learning of STEM (CATALYST)

The Center for the Advancement of Teaching and Learning of STEM (CATALYST) focuses on improving STEM (science, technology, engineering, mathematics) education for students from preschool to college. The center (1) conducts theoretically grounded research that contributes to our understanding and advancement of K-12 STEM education; (2) develops partnerships and research collaborations with other institutions, businesses, and agencies that support the

advancement of K-12 STEM teaching and learning; and (3) informs policy and public support of STEM teaching and learning at the local, national, and global levels. In this document, we report the major engagement-related activities and events conducted by CATALYST in January 2020 to December 2020.

2020 Indiana STEM Education Conference

CATALYST sponsored the fifth annual Indiana STEM Education Conference that was held virtually on January 15, 2020. “Meeting the Objectives of Indiana’s STEM Education Strategic Plan.” Associate Provost Steve Abel and Dean Nancy Marchand-Martella provided inspiring opening remarks. Mr. Ben Carter from Indiana Department of Education delivered the lunchtime keynote presentation, sharing his insights about STEM education. K-12 teachers, administrators and stakeholders attended 59 presentations by educators from P-12 schools and universities. In addition to the presentations, 10 research posters were shared by researchers and graduate students and 23 programs and businesses participated as exhibitors from organizations such as:

Indiana Department of Education, Indiana Department of Natural Resources, Carolina Biological Supply Co., Rolls Royce, Eli Lilly, Purdue Alumni Association, Project Lead the Way, Purdue University, University of Evansville, University of Notre Dame, IN-MaC, Indiana Council for Economic Education, Direct Employers Institute, Moss/Pitsco Education, Indiana Computes, Explore Interactive, Project Lead the Way, 1st Maker Space, OpenSciEd, Codelicious, OrthoWorx, Boulevard STEM Elementary, Southern Wells Elementary School, MSD of Pike Township, DELC Blue Academy, Lake Hills STEM Magnet School, Whitko Community Schools, Tri-County Intermediate School, Equitable Education Solutions, Tippecanoe Valley School Corporation, Perry Township Schools, Jeremiah Gray Elementary, Southport Middle School, Loge Elementary School, Southwest School Corporation, Lafayette School Corporation, Indianapolis Public Schools, Tecumseh Junior High School, Madison-Grant Jr./Sr. High School, Yorktown Community Schools

GEMS: Girls Excelling in Math and Science

GEMS (Girls Excelling in Math and Science) clubs were started in 1994 to encourage students, especially girls, to pursue education and careers in STEM fields, particularly technology, engineering and related high-paying, entrepreneurial enterprises. GEMS clubs strive to insure that a child sees themselves as a change agent or a problem-solver, a possible technology entrepreneur, engineer or a scientist, and as a person who makes a difference. Led by the team of Jill Newton, Elizabeth Suazo-Flores, Signe Kastberg, Rachael Kenney, Laura Bofferding, Laura Jones, GEMS came to Purdue and CATALYST in 2018 and we are currently building capacity for growing the GEMS club network both in Indiana and around the world.

Engineering by Design Workshops

CATALYST currently offers Engineering by Design workshops for Purdue undergraduate elementary education majors. Engineering by Design (EbD) is a program developed by the International Technology and Engineering Education Association. Led, by Dr. Nathan Mentzer, workshop participants engage in project-based, inquiry-based integrated STEM instruction while learning how to teach lessons from the EbD curriculum, which is based on the Standards

for Technological and Engineering Literacy, as well as national standards for science and math and the NAE's Grand Challenges for Engineering. Workshop completers received a Technology, Engineering, Environment, Mathematics and Science (TEEMS certificate), a complimentary subscription to Technology and Engineering Teacher (TET), ITEEA's flagship publication, and one-year access to the entire EbD curriculum. CATALYST will soon be offering EbD workshops for secondary teachers as well. Launched in Fall 2020, 7 undergraduates have completed the workshop.

Integration of Engineering Design and Life Science: Investigating the Influence of an Intervention on Student Interest and Motivation in STEM Fields

Integration of Engineering Design and Life Science: Investigating the Influence of an Intervention on Student Interest and Motivation in STEM Fields (aka PULSE) is a \$1,8 million project funded by the National Science Foundation that involves research, teaching, and engagement. The PULSE team is investigating middle school students' learning of and interest in Life STEM as a result of engaging in instruction that integrates science and engineering design. Specifically, we are conducting a large-scale, longitudinal field study to develop research-based understandings of how to support student learning and interest development among middle school students from underrepresented backgrounds. We are developing content rich, engineering-design based curriculum units that focus on core life science ideas and practices identified in NGSS (NGSS Lead States, 2013); providing sustained-contact professional development to allow middle school science teachers to meaningfully integrate engineering in their life science classes; and supporting teachers as they implement the project constructed teaching materials. Purdue faculty and staff involved include: Selcen Guzey (PI), Lynn Bryan (Co-PI), Muhsin Menekse (Co-PI), and Bill Walker.

PULSE involved 35 middle school teachers reaching more than 5500 students over the lifetime of the project. The following schools are project partners:

1. Battle Ground Middle School
2. East Tippecanoe Middle School
3. Klondike Middle School
4. Wainwright Middle School
5. Wea Ridge Middle School
6. Southwestern Middle School
7. Highland Middle School (Anderson Community Schools)
8. Frankfort Middle School
9. Rossville Junior High School
10. Carroll Junior High School
11. Delphi Middle School

Teachers participate in a 2-week online course and one-week (40 hour) face-to-face course at Purdue University each summer. In addition, teachers participate in 15+ hours of professional development in the academic year as a professional learning community.

Sensing Science through Modeling Matter

Sensing Science through Modeling Matter (S2M2) is a \$2.6 million National Science Foundation-funded research grant with an engagement component. Drs. Lynn Bryan and Ala

Samarapungavan collaborated with Concord Consortium to develop and research inquiry-based, modeling-based curriculum to support early science kindergarten learning of concepts involving matter and its changes.

In 2020, we conducted over 15 hours of professional development with 8 kindergarten teachers and 180 students from the following schools:

- Hershey Elementary
- Oakland Elementary
- 2 elementary schools in Chelmsford, Massachusetts

Industry-Driven Integrated STEM and Systems Approach to Innovative Incubation

Industry-Driven Integrated STEM and Systems Approach to Innovative Incubation is a U.S. Department of Agriculture/National Institute of Food and Agriculture grant in which Purdue scientists from the College of Agriculture co-develop agriculture and iSTEM educational materials that are solidly grounded in agro-ecosystem thinking. This project aims to increase rural high school teachers' agriculture and STEM literacy teaching capacity and to equip high school students' system thinking and data-based decision making skills by solving industry-based, real-world agricultural design challenges from pre-harvest to post-harvest themes. Dr. Hui Hui Wang is the PI, and include Neil Knobloch, Roger Tormoehlen, Betty Feng, and Peter Langenhoven are Co-PIs for this \$300,000 grant project.

Partnering high schools include:

- LaPorte High School
- TriCounty High School
- Westville High School
- West Washington High School
- Symore High School

WHIN with Local STEM

WHIN with Local STEM is a \$ 65,649 project funded by Dr. Hui Hui Wang, along with co-PIs Neil Knobloch, Roger Tormoehlen, Betty Feng, and Petrus Langenhoven developed data-based integrated STEM learning experience with high school teachers/students.

WHIN with Local STEM partnering schools include:

- Benton Central High School
- Frontier High School
- TriCounty High School

Building Excellence in STEM Teaching through Inquiry (BESTI)

Funded by a \$49,000 grant from the Indiana Department of Education, *Building Excellence in STEM Teaching through Inquiry* (BESTI) is a collaboration with rural school corporations, Wabash Valley Education Center (WVEC), and faculty from the Center for Advancing the Teaching and Learning of STEM (CATALYST), the College of Science, and the College of Education at Purdue University. Project BESTI involves a research-based, three-month intensive professional development program (January, February, and March 2020) aimed at enhancing teachers' knowledge and skills for teaching inquiry-based science and

mathematics that integrates argumentation from evidence. The project has three major objectives: 1) enhance teachers' science and mathematics content knowledge beyond the level that are expected to teach; 2) increase teachers' knowledge and practice of research-based, argument-driven inquiry-based pedagogical methods; and 3) enhance teachers' capacity to be reflective practitioners. This project is led by Drs. Selcen Guzey (PI), Lynn Bryan (co-PI) and William Walker (co-PI).

A total of 41 elementary and middle school science and mathematics teachers reaching more than 1,200 students participated from the following school districts:

- Attica Consolidate School Corporation
- Covington Community School Corporation
- North Montgomery Community School Corporation
- Clinton Prairie School Corporation
- Pioneer Regional School Corporation
- Frontier School Corporation
- Sheridan Community Schools
- South Montgomery Community School Corporation
- Rossville Consolidated Schools
- MSD Warren County
- Wabash Valley Education Center

Learning by Evaluating: Engaging Students in Evaluation as a Pedagogical Strategy to Improve Design Thinking

Learning by Evaluating: Engaging Students in Evaluation as a Pedagogical Strategy to Improve Design Thinking is a 3-year, \$1.26 million grant funded by the National Science Foundation. The goals of the project are to develop, refine, and test an educational innovation in which 9th grade students evaluate sample work as a starting point in engineering design cycles. The project will work directly with DeKalb County School District in Atlanta, Georgia, and connect to an internationally implemented 9th grade course offered through the International Technology and Engineering Educators Association STEM Center. The pedagogical strategies emerging from this project could be embedded in other STEM Center courses offered in K-12 classrooms internationally, or incorporated by individual teachers in a variety of disciplines through the dissemination of freely available instructional resources. The project team, led by Dr. Nathan Mentzer (PI), combines design education researchers from Purdue, Brigham Young, and the University of Georgia, the director of the International Technology and Engineering Education Association's STEM Center, and the Career Technical and Agricultural Education Instructional Coordinator for the DeKalb County School District.

Purdue Polytechnic High School (PPHS) Collaborative Research Grant

In partnership with Purdue Polytechnic High School, Dr. Hui Hui Wang (PI) and co-PIs Neil Knobloch, Roger Tormoehlen, Betty Feng, Petrus Langenhoven are leading this project that combines developing problem-solving skills and entrepreneurial thinking through Incubation Design Challenges (IDCs) in high school classrooms.

Indy STEM Teacher Residency

This \$5.1 million project, funded by the U.S. Department of Education, is a collaborative partnership between Indianapolis Public Schools (IPS) and Purdue University and is led by Drs. Lynn Bryan (PI), and Selcen Guzey (Co-PI). The overall vision of *Indy STEM Teacher Residency* (ISTR) is to strengthen the educational outcomes of students in the largest urban school district in Indiana, IPS, by preparing culturally competent, highly qualified career STEM teachers who will elevate student achievement in middle and high school science (including computer science), technology, engineering, and mathematics. The ISTR program is designed for prospective science and mathematics teachers who have a bachelor's degree in a STEM-related field. ISTR participants will complete Interdisciplinary Master of Science degree in Secondary STEM Education with initial Licensure and the K-12 Integrated STEM Graduate Degree Certificate within an 18-month period. As part of the Interdisciplinary Master of Science degree in Secondary STEM Education with initial Licensure, participants complete an academic year-long residency in an IPS school. Immediately following the completion of state licensure requirements and university coursework, ISTR teachers will be employed full-time in IPS. Partnering schools in IPS include:

- Arsenal Tech High School
- Longfellow Middle School
- George Washington High School

Strengthening Indiana's Future through the 21st Century STEM Teachers Scholarship Program is funded through the Indiana Commission for Higher Education and leverages the numerous school partnership developed through the Center for Advancing the Teaching and Learning of STEM. This project aims to strengthen Indiana's future by expanding the number and diversity of students who pursue a degree and career in K-12 STEM teaching and who develop enhanced knowledge and skills for integrating engineering design into science, mathematics, and technology instruction. In 2020, 19 scholarship recipients were completing not only a rigorous plan of study in one or more of the STEM disciplines that leads to state licensure, but also a 12-credit hour Integrated STEM Education Degree Certificate Program in which they develop enhanced knowledge and skills for STEM integration in K-12 instruction.

James Ackerman Center for Democratic Citizenship

- Purdue University's Constitution Day Celebration, 2005 – present. Professor VanFossen was invited to coordinate the event by the President's Office. Event involved 100 of Purdue students and faculty annually. Celebrity Quiz-Off has as participants state representatives, mayors, judges, Purdue student-athletes, as well as key Purdue administrators (Dean of Students, etc.). The center developed significant Constitution Day curriculum and Kahoot! Quizzes that teachers and students could access. Due to COVID, interactive booths were reduced in number and placed outside PMU with safety precautions. **Celebrity Quiz-off cancelled due to COVID**. Center created a [YouTube video](#) (introduced by Pres. Mitch Daniels) of local celebrities reading the Preamble and the Bill of Rights (most popular video on COE YouTube channel with more than 1,500 views).

- Co-founder and co-coordinator of the Purdue Series on Corporate Citizenship and Ethics. The Series, co-sponsored with Krannert School of Management, has hosted 30 speakers. Series speaker John Carryou was scheduled for April, but due to COVID, it was moved to October 19, 2021, in Loeb Playhouse.
- Purdue University's Holocaust Remembrance Educator Workshop. Sessions for students have included Holocaust survivors, presentations by notable children's authors such as and Lois Lowry (Number the Stars), plays and art displays. **Cancelled the Educator Workshop in April due to COVID.**
- Project Citizen. Civic education outreach project. Students address local public policy problem, research solutions, and make presentation before a panel of judges. High profile members of the local community have served as judges (e.g., state reps., mayors, local judges, etc.). Ackerman Center has sponsored two local showcases annually since 2009. The Project Citizen Showcase is a graduation requirement for Oakland High School in LSC. **Due to COVID, 2020 Showcases took place via Zoom.**
- LUM Citizenship Classes: Ackerman Center developed curriculum guides and donated teacher's manuals, world maps, and 50 textbooks to the LUM Citizenship Classes. The class assists future citizens in preparing to take the naturalization test. The research-based methods promote greater comprehension and retention of the course material. This work through the Ackerman Center enabled LUM to qualify for a USCIS Citizenship & Assimilation Grant. The Ackerman Center has supported four 5-week classes to this point. To date, four former students have successfully achieved U.S. citizenship! **2020 classes were cancelled due to COVID.**
- Professional Development Series for K12 Educators. The Center provides multiple formats of professional development including an evening series during the school year. The goal of our programming is to support elementary and secondary teachers to develop classroom-ready instructional strategies and activities focused on the skills and dispositions associated with citizenship. The 2019-20 topic was "Teaching Elections Despite the Politics" and the three-part series included:
 - **Session 1: Elections Then and Now – Monday, Jan. 13, 2020**
Presenters: Dr. Phillip VanFossen, Ackerman Center, & Julie Roush
Focus: Why do US elections run the way they do? Explore the foundations in the Constitution and how elections have evolved. Get an insider view on election logistics today.
 - **Session 2: Election Literacy – Monday, Feb. 10, 2020**
Presenter: Jessi McCarthy, Freedom Forum
Focus: Help your students learn strategies for analyzing the many types of messages being directed at voters in election campaigning. This virtual workshop will use technology tools and the Newseum's "Decoding Elections: Process, Persuasion & Participation" resources to teach election media analysis.
 - **Session 3: Understanding the Election Machine – Monday, Mar. 9, 2020**
Presenter: Dr. Jay McCann, Purdue Political Science
Focus: Pull back the curtain on presidential elections. What happens behind the scenes before candidates are on the ballot? How does polling work and how important is it? What should citizens know about elections that they probably don't?

Feedback from teachers was overwhelmingly positive, e.g.,:

- “The history of Indiana and US elections was fascinating to me. Phil VanFossen did a great job facilitating the session by presenting interesting tidbits of information.”
- “When I attend an Ackerman workshop I know I will be provided with materials I can use with my students.”

GK-12: Graduate Engagement in K-12

Anatoli Rapoport, Faculty in Social Studies Education. The GK-12: Graduate Engagement in K-12 program started in 2006. The program gives masters, doctoral, and post-doctoral students a mentored, in-depth opportunity to share their research with K-12 students and teachers in local schools. It provides participants with enhanced skills and experience in outreach, teaching, and communication of their research with diverse audiences. Regular annual surveys demonstrate that program alumni believe they are more competitive for academic and professional jobs due to the knowledge and skills obtained during the program.

Initially, the program was funded by a NSF grant (2006-2008). Since 2009, the program is supported by Graduate School through Bisland Strategic Initiative Fellowship that provided funding for a Graduate Assistant who organizes and coordinates the program on a daily basis. Unfortunately, Graduate School stopped supporting the program in 2019.

GK-12 is one of the most sustainable graduate programs on campus. For 14 years since its inception, almost 300 graduate and post-doctoral students participated in the program. After a slight decline in 2009-2010, the enrollment steadily goes up. 23 masters and doctoral students participate in 2018-19 GK-12 program and 18 – in 2019-2020. The program partnered with 4 local schools: Wea Ridge Elementary, Tecumseh Middle, Harrison High, and McCutcheon High. Tecumseh Middle School is the principal partner of the program. More than 40 Tecumseh teachers have mentored GK-12 participants since 2006, supervising their work in classrooms. The estimated number of elementary, middle and high school students impacted by the program is about 6,000. All program participants apply and receive service learning grants that range from \$500 to \$1,500 each.

A primary purpose of the program is to translate participants’ pedagogical experiences into research and to facilitate the development of a research agenda in education related to program participants’ expertise. Since 2011, participants have presented individual and group research at Annual Graduate Student Education Research Symposium (AGSERS). Program participants made presentations at regional and national conferences. 7 articles in peer-reviewed journals were published based on research conducted during GK-12.

The program has recently started to establish and develop international relations. Program international partners are:

- Doktorander / Lärander/ DiL (Doctoral Students and Learning) in Angelholm commune +Lunt University (Sweden)
- Preparation Program in ITMO University (St. Petersburg, Russia)
- Katolische Universität Leuven (Belgium)

GK-12 representatives visited Sweden in summer 2018. In August, 2019, DiL Program Director, Frank Fredriksson, visited Purdue. During the visit, Mr. Fredriksson observed GK-12 seminars, visited local schools, made several presentations about DiL Program. He met with Graduate School Associate Dean Melanie Morgan, COE Associate Dean Kathy Obenchain, and C&I Department Head Janet Alsup.

In Spring 2020, the Program continued in online format. Due to the Covid-19 restrictions in partner schools, the Program was terminated for the Fall and Spring semesters in 2020-2021. The Program will start again in the Fall of 2021.

University & Community Engagement

- **Animal Advocates of Greater Lafayette;** Professor Nadine Dolby's engagement in 2020 was focused on community engagement, particularly in response to the pandemic. She started a community-based education organization, focused on companion animal education, humane education, and the human/animal bond. Animal Advocates of Greater Lafayette received non-profit status in May of 2020, distributed over 40,000 lbs. of pet food to needy families in our community, and has continued virtual classes through Food Finders Food Bank. In addition, she gave multiple interviews to local media (WLFI and Star City News) in 2020.
- **Downtown Boxing Gym (DBG):** Professor Amanda Case partnered with DBG. Since 2013 Dr. Case has been collaborating with DBG, serving as a program evaluator and consultant to support their youth development programming. The work conducted in 2020 included creating and implementing a year-round evaluation schedule, conducting a pilot project of their embedded STEAM lab, consulting on the development of their college success programming, and sitting in on meeting with potential funders to assist in describing DBG's evaluation plans.
- **Purdue Autism Research Center (PARC):** Professor Mandy Rispoli serves as the Co-Director of the Purdue Autism Research Center (PARC). She has served in this role since 2017. As Co-Director of PARC, Dr. Rispoli led PARC faculty in the development of the mission and vision statements and identification of three signature areas. She also led PARC in the creation of by-laws and an updated structure for PARC leadership. Dr. Rispoli planned and co-chaired the PARC conference in 2018 and planned the 2020 conference. Dr. Rispoli collaborates with development to support the stewardship of PARC donors. She oversees PARC budget and finances and provides annual reports to PARC faculty and the Dean of the College of HHS. As part of the Purdue Autism Research Center, Associate Professor Rose Mason developed collaborative research partnerships with faculty in Psychology, Engineering Education, and Human Development and Family Studies. These research projects will provide preliminary data for cross college grant submissions to NIH and NSF. Additionally, she served as communication chair, ensuring the work of PARC faculty and students was disseminated via news outlets and social media.

2020 Faculty /Staff Engagement Awards and Recognition

These awards were presented for the 2019-2020 academic year

Christian J. Foster Award – Lynn Bryan

Outstanding Service Award – Gabbrielle Waldon

Outstanding Faculty Engagement Award – Trish Morita-Mullaney

Earl B. Notestine Award – Amanda Goodwin Bowman

EDCI Outstanding Faculty Engagement Award – Trish Morita-Mullaney

EDST Outstanding Faculty Engagement Awards – David Sears, Denise Whitford, Blake Allen, Marcia Gentry

Purdue Service-Learning Award – JoAnn Phillion

Engagement Funding Sources

Department of Education, Indy STEM Teacher Residency and Indiana Commission for Higher Education, Strengthening Indiana’s Future through the 21st Century STEM Teachers Scholarship Program \$5,177,290 and \$255,000 (details under CATALYST section)

Indiana Department of Education \$82,700 (details under Guzey in P-12 Schools section) – BESTI Workshops

NSF \$2,018,951 (details under Capobianco in P-12 Schools section)

NSF \$1,800,000 (details under Guzey in P-12 Schools section)

NSF \$502,141 (details under Xin in P-12 Schools section)

PRF \$31, 119 Rogat, T.K. (PI). Role of teacher practices in promoting collaborative group productive disciplinary engagement. Funded by the Purdue Research Foundation (PRF) Year-long program for \$31,119.00. July 1, 2020 – June 30, 2021.

U.S. Department of Education’s Office of English Language Acquisition (2017-2022); \$1,892,481. Project PUEDE, Responsibility: 80% (details under PI Morita-Mullaney in P-12 Schools section)

U.S. Department of Education’s Office of English Language Acquisition (2017-2022); \$1,840,319. Leveraging the Lectura y Lenguaje. Responsibility: 80% (details under PI Morita-Mullaney in P-12 Schools section)

US Dept. of State \$250,000 (part of funding) (Rapoport) – Evaluation of Benjamin Franklin Transatlantic Fellows Summer Institute. Surveying and interviewing alumni of BFTF 2007-2019 and host families 2013-2019. Survey was developed in consultation with the US Department of State. 220+ alumni and 27 host families were surveyed.

Scholarship of Engagement

Publications

- Case, A. S. (2020). "Doing our part": A case study of what motivates and enables black family engagement in one afterschool program, *Journal of Youth Development*, 15(6):44-69, DOI: 10.5195/jyd.2020.887.
- Capobianco, B. M., Radloff, J., Lehman, J. (2020). Elementary science teachers' sense-making with learning to implement engineering design and its impact on students' science achievement, *Journal of Science Teacher Education*, 32(1): 39-61, DOI: 10.1080/1046560X.2020.1789267.
- Cress, A., Desmet, O. A., & Younker, B. (2020). Neighbors helping neighbors: A university and K-12 school partnership, *Gifted Child Today*, 43(1): 12-19, DOI: 10.1177/1076217519880580.
- Desmet, O. A., Pereira, N., & Peterson, J. S. (2020). Telling a tale: How underachievement develops in gifted girls, *Gifted Child Quarterly*, 64(2): 85-99, DOI: 10.1177/0016986219888633.
- Ellis, L. L., & Green, C. R. (2020). It takes collective advocacy: Building partnerships for students of color and linguistically diverse students, *Parenting for high potential; Washington* 9(3): 14-19.
- Froiland, J. M. (2020). A comprehensive model of preschool through high school parent involvement with emphasis on the psychological facets, *School Psychology International*, 42(2): 103-131, DOI: 10.1177/0143034320981393.
- Froiland, J. M. (2020). Parental autonomy and relatedness support. In Worrell, F. C., Hughes, T. L., & Dixon, D. D. (Eds.), *The Cambridge Handbook of Applied School Psychology* (pp. 260-276). Cambridge: Cambridge University Press.
- Froiland, J. M., Worrell, F.C., Olenchak, R.C., & Kowalski, M.J. (2021). Positive and negative time attitudes, intrinsic motivation, behavioral engagement and substance use among urban adolescents, *Addiction Research & Theory*, 29(4): 347-357, DOI: 10.1080/16066359.2020.1857740.
- Gentry, M., & Cress, A. (2020). Grouping strategies for use with students with gifts and talents. In J. H. Robins, J. L. Jolly, F. A. Karnes, & S. M. Bean (Eds.), *Methods and materials for teaching the gifted*, 5th edition (pp. 259-277). Routledge.
- Jen, E., Gentry, M., & Moon, S. (2017). High-ability students' perspectives about an affective curriculum in a diverse, university-based summer residential enrichment program. *Gifted Child Quarterly*, 61: 328-342. MENSA Award winner.

- Mason, R.A., Wills, H.P., Irvin, D., Jia, F., & Kamps, D. (2020). Ecobehavior assessment of paraeducator behaviors that support the engagement of children with disabilities, *Exceptional Children*, 86(4): 413-429, DOI: 10.1177/0014402919893693.
- Morita-Mullaney, T. (2020). Multilingual multiliteracies of emergent bilingual families: Transforming teacher's perspectives on the "literacies" of family engagement. *Theory into Practice*, 60: 83-93, DOI: 10.1080/00405841.2020.1829382.
- Ponkshe, V. D., Nitsure, N. V., Chowkase, A. A., & Kulkarni, P. D. (2020). *Learning to explore: Project by project* [Video], Jnana Prabodhini Educational Activity Research Centre, (YouTube) Retrieved on August 31, 2021 from, <https://www.youtube.com/watch?v=VmJ98umdUn8>.
- Vaiouli, P. & Grimmet, K. (2020) Enhancing engagement and early literacy through music: Perspectives from Head Start teachers, *Journal of Education and Practice*, 11(14): 11-20, DOI: 10.7176/JEP/11-14-02.
- Xin, Y.P., Kim, S. J., Lei, Q., Wei, S., Liu, B., Wang, W., Kastberg, S., Chen, Y., Yang, X., Ma, X., & Richardson, S.E. (2020) *Reading &* The effect of computer-assisted conceptual model-based intervention program on mathematics problem-solving performance of at-risk English learners, *Writing Quarterly*, 36(2): 104-123, DOI: 10.1080/10573569.2019.1702909.
- Xin, Y.P., Park, J., Tzur, R., & Si, L. (2020). The impact of a conceptual model-based mathematics computer tutor on multiplicative reasoning and problem-solving of students with learning disabilities. *The Journal of Mathematical Behavior*, 58, 100762, DOI: 10.1016/j.jmathb.100762.

Presentations

- Aqazade, M., Bofferding, L., Kastberg, S., Richardson, S. E., Simpson, A. (2020), *Promoting Curiosity and Wonder Through Family Mathematics and Science Nights*, Annual meeting presentation. Association for Mathematics Teacher Education, Phoenix, AZ, <https://amte.net/>
- Duha, M.S., Richardson, J.C. Maeda, Y. (2020). *The effect of previous online learning experience on Col, engagement, and satisfaction scores*. Conference presentation, Association for Educational Communications and Technology (Virtual).
- Panos, A., Wessel-Powell, C., Pennington, C., & Weir, R. (2020). *Forging new links: Routes, histories, and maps in literacy research and engagement*. Conference presentation, Literacy Research Association Conference (Virtual).
- Wei, S., Xin, Y. P., & Chen, Y. (2020). *Visualizing Students' Eye Movement to Understand Their Problem-Solving Process*. Conference presentation, The 22nd International Conference on Human Computer Interaction, Copenhagen, Denmark.

Ongoing Projects

Begeske, J. & Smith, J., (data collection in progress) *Beyond the school day: Pre-service teacher engagement with families of children with disabilities.*

Radloff, J., Capobianco, B., Weller, J., Rebello, S., Eichinger, D., & Erk, A. (in press). *Aligning undergraduate science curricula with three-dimensional learning.*