

# Kristin K. Frady, Ed.D.

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Assistant Professor, Clemson University

*College of Education; Educational and Organizational Leadership Development*

*College of Engineering, Computing and Applied Sciences; Engineering and Science Education*

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## ACADEMIC IDENTIFICATION

### PROFESSIONAL PREPARATION

University of Florida, <i>Gainesville, FL</i>	Doctor of Education, Curriculum & Instruction Emphasis: Educational Technology	December 2012
University of South Carolina, <i>Columbia, SC</i>	Master of Arts in Teaching, Business Education	May 2007
Clemson University, <i>Clemson, SC</i>	Bachelor of Science, Management Minor: Elementary Education	May 2003

## RESEARCH

### RESEARCH INTERESTS

My research agenda focuses on innovations in workforce and career development in educational, community, and industry contexts.

The context of my research emphasizes three primary areas: (1) middle skill workers; (2) workforce and career development; and (3) secondary career and technical education and community colleges, specifically focusing on STEM education.

### PUBLICATIONS

#### Peer-Reviewed Publications

Herro, D., McNeese, N., O'Hara, R. \*, **Frady, K.**, & Switzer, D. (2021). Exploring graduate students collaborative problem-solving in engineering design tasks, *Journal of Engineering Design*, DOI: 10.1080/09544828.2021.1922616

**Frady, K.** (2021). Media analysis of middle skill learning opportunities shaped by COVID-19. *New Horizons in Adult Education and Human Resource Development*, 33(2).

Sims, C. M., Carter, A. D., **Frady, K.**, DePeralta, A. \*, Hofrova, A. \*, & Brown, S\*. (2021). Furthering women faculty in leadership roles - A human performance improvement case study. *Performance Improvement Quarterly*, 34(1), 1-32.

**Frady, K.** (2020). A practical workforce development framework using strategies and initiatives to strengthen the mature workforce. In C. Hughes (Ed.), *Strategies for Attracting, Maintaining, and Balancing a Mature Workforce* (pp. 237-269). IGI Global.

**Frady, K.** (2019). Developing STEM faculty leaders: A catalyst for instructional transformation. *The Community College Enterprise*, 25(2), 64-76.

Hughes, C., Robert, L., **Frady, K.**, Arroyos, A. (2019). Managing technology and middle- and low-skilled employees: Advances for economic regeneration. Emerald Publishing Group.

Syed, Z.\*, Bertrand, J., Wang, T.\*, Hartley, R., **Frady, K.**, Madathil, K., Gramopadhye, A., & Wagner, J. (2019). Evaluation of virtual reality based learning materials as a supplement to the undergraduate mechanical engineering laboratory experience. *International Journal of Engineering Education*, 35(3), 1-11.

Madathil, K., **Frady, K.**, Hartley, R., Bertrand, J., Alfred, M.\*, & Gramopadhye, A. (2017). An investigation on the impact on two-year college student engagement and learning outcomes when virtual reality-based case studies are integrated into an online asynchronous learning environment. *Computers in Education Journal*, 8(3), 1-10.

Parmar, D.\*, Bertrand, J.\*, Babu, S., Madathil, K., Zelaya M.\*, Wang, T.\*, Wagner, J., Gramopadhye, A., & **Frady, K.** (2016). A comparative evaluation of viewing metaphors on psychophysical skills education in an interactive virtual environment. *Virtual Reality*, 20, 141-157.

**Frady, K.** (2012). *Facilitation strategies and tactics for professional development in online learning communities* (Publication No. 3569619) [Doctoral dissertation, University of Florida]. ProQuest Dissertations and Theses Global.

\*indicates graduate student

## Editorials and Book Reviews

**Frady, K.** (2021). Broadening the role of STEM educators: Developing a more equitable STEM workforce for the future. *School Science and Mathematics*, In press.

**Frady, K.** (2019). The Future of Work, by Darrel M. West, Washington, DC: The Brookings Institution. *Community College Enterprise* 25(2), 96-98.

**Frady, K.** (2020). Workforce Inter-Personnel Diversity: The Power to Influence Human Productivity and Career Development, by Clarethia Hughes. Cham, Switzerland: Palgrave Macmillan, 2019. 134 pages, \$79.99 (eBook). *New Horizons in Adult Education and Human Resource Development*, 32(2), 65-67.

## Refereed Conference Publications

**Frady, K.**, Brown, C., High, K., Hughes, C., O'Hara, R.\*, & Huang, S.\* (2021, July 26-29). *Developing two-year college student engineering technology career profiles* [Paper presentation]. Annual American Society for Engineering Education Conference, Long Beach, CA, United States. **\*\*Best in Division Award\*\***

**Frady, K.**, Hughes, C., & High, K. (2021, July 26-29). *Barriers and supports needed to improve ET career development: A two-year view of D.E.E.P. engineering technology career formation progress and impacts* [Paper and poster presentation]. Annual American Society for Engineering Education Conference, Long Beach, CA, United States.

**Frady, K.**, Stockwell, D.\*, Hughes, C., & High, K. (2021, February 18). *Examination of the engineering technology career-related interest and choices impacting career pathways in a rapidly changing marketplace: A qualitative case study* [Paper presentation]. Academy of Human Resource Development Conference in the Americas, Online.

Gallagher, E., Vagnozzi, A. M.\*, Lanning, R.\*, Brown, A. D., Brown, C., **Frady, K.**, Brisbane, J. M.\*, Matthews, M. A., Murphy, J.\*, Patel, K.\*, Pfirman, A. L., Rabb, R. J., Roberts, R. H., Welch, R.

W., Gramopadhye, A. (2020, June 21-24). *Poverty and guidance: Challenges and opportunities in mathematics preparation for engineering* [Paper presentation]. Annual American Society for Engineering Education Conference, Montréal, QC, Canada.

**Frady, K.**, High, K., Hughes, C., & Kosanovich, M.\* (2019, October). *Using career orientations to map professional formation in engineering technology* [Paper presentation]. *Proceedings of the 49th Annual Frontiers in Education (FIE) Conference*, Cincinnati, OH, United States: IEEE.

Gallagher, E., Brown, D.A., Brown, C.J., **Frady, K.**, Marcanikova, M.\*, Atamturktur, S., Ihekweazu, S., Matthews, M., Rabb, R., Roberts, R., Solan, I., Welch, R., & Gramopadhye, A. (2019, June). *Statewide coalition: Supporting underrepresented populations in precalculus through organizational redesign toward engineering diversity (SC:SUPPORTED) results from year one* [Paper presentation]. Annual American Society of Engineering Education Conference, Salt Lake City, UT, United States.

Gallagher, E., Brown, D.A., Brown, C.J., **Frady, K.**, Bass, P., Matthews, M., Peters, T., Rabb, R., Solan, I., Welch, R., & Gramopadhye, A. (2019, June). *Identifying prevalent mathematical pathways to engineering in South Carolina* [Paper presentation]. Annual American Society of Engineering Education Conference, Salt Lake City, UT, United States.

Marcanikova, M.\*, Gallagher, E., Brown, C. J., Brisbane, J.\*, Brown, D. A., Dunwoody, L. A.\*, **Frady, K.**, Hines, A.\*, Murphy, J. C.\*, Patel, K.\*, Pfirman, A. L.\*, Roberson, S. L.\*, & Gramopadhye, A. (2019, March). *High school technology as a non-predictor of first college math course* [Paper presentation]. American Society of Engineering Education Southeast (ASEE-SE) Annual Regional Conference, Raleigh, NC, United States.

**Frady, K.** (2019, February). *An examination of the role of strategic human resource development in the optimization of the skilled technical workforce* [Paper presentation]. Academy of Human Resource Development Conference in the Americas, Louisville, KY, United States.

Sims, C. M., Carter, A.D., & **Frady, K.** (2019, February). *Furthering women faculty in leadership roles - A human performance improvement case study* [Paper presentation]. Academy of Human Resource Development Conference in the Americas, Louisville, KY, United States.

**Frady, K.**, & Hughes, C. (2018, February). *Using strategic career analysis to create a regionally focused career development framework* [Paper presentation]. Annual Academy of Human Resource Development Conference in the Americas, Richmond, VA, United States.

**Frady, K.**, Ezealah, I.\*, Ciuca, C., & Stoyanoff, M. (2017, June). *Selecting and designing assessment to measure early engineering curriculum impact on application of engineering design and attitudes toward STEM* [Paper presentation]. Annual American Society of Engineering Education Conference, Columbus, OH, United States.

Syed, Z.\*, Wang, T.\*, **Frady, K.**, Madathil, K., Bertrand, J., Hartley, R., Wagner, J., & Gramopadhye, K. (2017, June). *Use of virtual reality tools in an undergraduate mechanical engineering manufacturing course* [Paper presentation]. Annual American Society of Engineering Education Conference, Columbus, OH, United States.

**Frady, K.**, Hughes, C., & Madathil, K. (2017, March). *A pilot study identifying recruitment and pathway development for high school manufacturing* [Paper presentation]. Annual Academic and Business Research Institute Conference, Asheville, NC, United States.

**Frady, K.**, Hartley, R., Barger, M., Craft, E., & Wosczyzna-Birch, K. (2017, February). *Best practices for education and workforce development leaders exploring engagement with federal initiatives* [Paper presentation]. American Society for Engineering Education Conference for Industry and Education Collaboration (CIEC), Jacksonville, FL, United States.

**Frady, K.,** Hartley, R., Madathil, K., Rivers, H., Craft, E., & Frazier, S. (2016, June). *Connecting Two-year faculty professional development with technology and student learning perceptions in online environments* [Paper presentation]. American Society for Engineering Education (ASEE) Conference & Exposition, New Orleans, LA, United States.

Madathil, K., **Frady, K.,** Gramopadhye, A., Bertrand, J.\*, & Hartley, R. (2016, June). *Integrating case studies in an online asynchronous learning environment: an empirical study to evaluate the effect on community college student learning outcomes and engagement when case studies are presented using virtual reality* [Paper presentation]. American Society for Engineering Education (ASEE) Conference & Exposition, New Orleans, LA, United States.

**Frady, K.,** Gramopadhye, A.K., Madathil, K., Rivers, H., & Dillard, D. (2015, June). *CA<sup>2</sup>VES, an NSF regional center, enhancing the engineering and technician education pipeline* [Paper presentation]. American Society for Engineering Education (ASEE) Conference & Exposition, Seattle, WA, United States.

Parmar, D.\*, Bertrand, J.\*, Shannon, B.\*, Babu, S., Madathi, K., Zelaya, M.\*, Wang, T.\*, Wagner, J., **Frady, K.,** & Gramopadhye, A. (2014, March). *Interactive breadboard activity simulation (IBAS) for psychomotor skills education in electrical circuitry* [Paper presentation]. 3D User Interfaces (3DUI), 2014 IEEE Symposium, Minneapolis, MN, United States.

Craft, E., Hall, V., **Frady, K.** (2014, February 6). *An adaptive digital learning model for the globalized era* [Conference session]. American Society of Engineering Education Southeast (ASEE-SE) Annual Regional Conference, Savannah, GA, United States.

Wang, T.\*, Wagner, J., **Frady, K.,** Bertrand, J.\*, Madathil, K., Zelaya\*, M., Gramopadhye, A., & Babu, S. (2013, June 23-26). *Interactive three dimensional visualization based engineering technology education – Modeling and animation* [Paper presentation]. 120th American Society for Engineering Education (ASEE) Conference & Exposition, Atlanta, GA, United States.

## PRESENTATIONS

### National Conference Presentations

**Frady, K.,** Hughes, C., High, K., & Stockwell, D.\* (2020, June). *Engineering technology student perception and knowledge of future workplace skills and career desires: A qualitative case study* [Session canceled]. 2020 Industry Studies Association Conference, Boston, MA, United States.

**Frady, K.,** Hughes, C., High, K., & Stockwell, D.\* (2019, October 22). *Developing Engineering Experiences and Pathways in engineering technology career formation (D.E.E.P.)* [Poster presentation]. National Science Foundation Division of Engineering Education and Centers Grantee Conference, Washington, DC, United States.

**Frady, K.,** Hughes, C., & High, K. (2019, June 1). *Exploring the career profile of middle skill advanced manufacturing students and professionals for advancing regional and organizational workforce development* [Conference session]. Industry Studies Association Conference, Nashville, TN, United States.

Sims, C. M., Carter, A. D., & **Frady, K.** (2018, October 27). *Furthering women faculty in higher education leadership roles: A case study* [Conference session]. International Leadership Association 20th Anniversary Global Conference on Authentic Leadership for Progress, Peace, & Prosperity, Palm Beach, FL, United States.

Hughes, C., & **Frady, K.** (2018, June). *Understanding the relationship of technology entrepreneurs to rural community economic development* [Conference session]. Industry Studies Association Conference, Seattle, WA, United States.

Hughes, C., & **Frady, K.** (2018, June). *Developing relationships between two-year college engineering technology programs and regional and national workforce development organizations* [Conference session]. Industry Studies Association Conference, Seattle, WA, United States.

**Frady, K.**, & Hartley, R. (2016, June 28). *Improving professional development and integrating e-learning experiences* [Conference session]. High Technology Impact Conference (HI-TEC), Pittsburgh, PA, United States.

**Frady, K.**, & Hartley, R., (2015, October 22). *Engaging public-private perspectives to build the technician pipeline* [Conference session]. National Science Foundation Advanced Technological Education Principal Investigators Annual Conference, Washington, DC, United States.

**Frady, K.**, Madathil, K., & Hartley, R., Barger, M., Feldmaier, R. (2015, October 22). *Digital learning, virtual reality, and recruitment: Fueling a new vision for technological education* [Conference session]. National Science Foundation Advanced Technological Education Principal Investigators Annual Conference, Washington, DC, United States.

**Frady, K.**, Hartley, R., & Madathil, K. (2015, October 16). *An insider's view: Using public policy to build and reinforce a national workforce development digital learning model* [Conference session]. Online Learning Consortium Annual Conference, Orlando, FL, United States. **\*\*Best in Track Award\*\***

**Frady, K.**, Madathil, K., & Hartley, R. (2015, July 30). *Virtual reality in technology education: The ultimate educational technology* [Conference session]. High Technology Impact Conference (HI-TEC), Portland, OR, United States.

Hartley, R., **Frady, K.**, Madathil, K., & Gramopadhye, A. (2013, November 20-22). *Educating the next generation workforce: Collaboration, convenience, and quality of online and digital learning* [Conference session]. Sloan Consortium International Conference on Online Learning, Orlando, FL, United States.

**Frady, K.**, Hartley, R., Madathil, K., Gramopadhye, A., Tomlin, D., & Barlow, W. (2013, October 24). *Advancing innovation in technician education: Flipping classrooms and integrating open learning resources* [Conference session]. National Science Foundation Advanced Technological Education Principal Investigators Annual Conference, Washington, DC, United States.

Eikenbusch, W., Glover, M., Shugart, P.A., Beheler, A., **Frady, K.**, Gramopadhye, A., & Feldmaier, R. (2013, October 24). *Industry voices: What industry wants from graduates to hire them and keep them* [Panel session] National Science Foundation Advanced Technological Education Principal Investigators Annual Conference, Washington, DC, United States.

**Frady, K.**, Hartley, R., & Gramopadhye, A. (2013, October 29). *Recruiting, retaining, and transitioning students into STEM programs* [Conference session]. STEMtech Annual Conference, Atlanta, GA, United States.

Stewart, M., **Frady, K.**, & Hall, V. (2013, October 28). *SC ACCELERATE, education – career success* [Conference session]. STEMtech Annual Conference, Atlanta, GA, United States.

**Frady, K.**, Hall, V., Madathil, K., Hartley, R., & Gramopadhye, A. (2013, July 24). *Everything's bigger online: Leveraging open learning resources to build capacity in technician education* [Conference session]. High Impact Technology Exchange Conference, Austin, TX, United States.

**Frady, K.,** Zelaya, M.\*, & Gramopadhye, A. (2012, October 10-12). *Driving curriculum: A collaborative model aligning technology with instructional design* [Conference session]. 18th Annual Sloan Consortium Conference, Orlando, FL, United States.

**Frady, K.,** Zelaya, M.\*, & Gramopadhye, A. (2012, October 28-31). *A technology quartet: Harmony between technology integration and instructional design* [Conference session]. STEMtech Annual Conference, Kansas City, Missouri, United States.

### **Invited Presentations, Seminars, Workshops, and Panel Discussions**

**Frady, K.,** & Hughes, C. (2020, February 26). *Advancing human resource development research through building a diverse external funding portfolio* [Preconference workshop]. Academy for Human Resource Development International Research Conference in the Americas, Atlanta, GA, United States.

**Frady, K.** (2019, August 15). *Balancing act: Research, teaching, service* [Panel discussion]. Clemson University New Faculty Orientation, Clemson, SC, United States.

**Frady, K.** (2018, March 18). *Workforce and education development: Improving human capital through innovative interventions and education* [Invited presentation]. Clemson University CAREER Academy, Clemson, SC, United States.

**Frady, K.** (2017, September 30). *Enhancing the engineering technician education pipeline through workforce development* [Invited presentation]. Clemson University Engineering and Science Education Seminar, Clemson, SC, United States.

Barger, M., **Frady, K.,** & Lesiecki, M. Centers Collaborative for Technical Assistance, (2016, April 28). *Highlights of advanced manufacturing and engineering technology resources from ATE centers* [Webinar]. Centers Collaborative for Technical Assistance.

**Frady, K.,** Hartley, R. (2015, August 6). *Professional development for technical education and workforce development* [Invited presentation]. Southeastern Institute of Manufacturing Technology, Florence, SC, United States.

**Frady, K.** (2015, July 9). *Clemson University center for workforce development: A new model* [Invited presentation]. AABEA/Align SC Board Meeting, Clemson, SC, United States.

**Frady, K.** (2015, March 27). *Clemson University center for workforce development: A regional manufacturing solution* [Invited presentation]. Appalachian Council of Government Board Meeting, Greenville, SC, United States.

**Frady, K.** (2015, May 14). *Clemson University center for workforce development: A regional solution* [Invited presentation]. Oconee Business Forum, Oconee, SC, United States.

**Frady, K.** (2015, April 2). *Clemson University center for workforce development: Supporting the entrepreneurial workforce* [Invited presentation]. Annual SC Technology Villages Annual Conference, Columbia, SC, United States.

**Frady, K.,** (2015, July 31) *Locating resources for TAACCCT grants* [Panel discussion]. Department of Labor Trade Adjustment Assistance for Community College Career Training (TAACCCT) Convening, Portland, OR, United States.

**Frady, K.,** & Peters, T. (2015, July 27). *Collaborating for workforce development MAGIC: Emerging models and practices* [Invited presentation]. GE Foundation Conference, Orlando, FL, United States.

**Frady, K.,** Kolliopoulos, A., Lesiecki, M., & Hall, V. (2015, April 16). *Locating free curriculum and professional development resources* [Webinar]. Centers Collaborative for Technical Assistance.

**Frady, K.,** Hartley R. (2014, October 30). *SC Council of Government directors overview* [Invited presentation]. Economic Development Administration 2014 Workforce Investment Board Directors' Retreat, Wampee, SC, United States.

**Frady, K.** (2014, October 9). *Feeding the talent pipeline - Workforce development challenges and opportunities* [Panel discussion]. Southern Automotive Conference, Birmingham, AL, United States.

Gramopadhye, A., **Frady, K.,** & Hartley, R. (2013, October 23). *Leveraging and linking grant funds: a sustainability model presented by CA<sup>2</sup>VES* [Pre-conference workshop]. National Science Foundation Advanced Technological Education Principal Investigators Annual Conference, Washington, DC, United States.

**Frady, K.** (2013, February 18). *Building knowledge and supporting collaborative inquiry in online communities* [Webinar]. Academic Pediatric Association e-Learning Special Interest Group in Medical Education.

## **Regional Conference Presentations**

Stockwell, D.\*, **Frady, K.** (2020, February). *Transfer student capital: Increasing Latinx student participation in STEM* [Conference session]. 32<sup>nd</sup> Annual South Carolina Educators for the Practical Use of Research Conference, Columbia, SC, United States.

Gallagher, E., Brown, C. J., **Frady, K.** (2019, March 1). *Predictive models for initial college math course and major selection based on high school institutional factors* [Conference session]. 31<sup>st</sup> Annual South Carolina Educators for the Practical Use of Research Conference, Columbia, SC, United States.

**Frady, K.,** Trabookis, Z. (2015, August 20). *Introduction to EducateWorkforce digital learning tools* [Webinar]. NC Department of Public Instruction Career and Technical Education.

**Frady K.,** Trabookis, Z. (2016, March 17). *Continuing use and best practices incorporating educateworkforce digital learning tools* [Webinar]. NC Department of Public Instruction Career and Technical Education.

Hartley, R., **Frady, K.** (2015, June 24). *Imaginary boundaries: Focusing on the combination of two- and four-year options to create opportunities in South Carolina's leading industries* [Conference session]. Education and Business Summit, Greenville, SC, United States.

**Frady, K.,** Hartley, R. (2014, November 13). *STEM career pathways into advanced manufacturing* [Conference session]. 12<sup>th</sup> Annual Guidance Standards and Career Development Workshop. Greenwood, SC, United States.

**Frady, K.,** Hartley, R. (2014, June 12). *Local workforce development solutions* [Conference session]. Oconee Teacher Summer Institute, Seneca, SC, United States.

Hartley, R., **Frady, K.** (2014, April 28). *Digital pathways into advanced manufacturing careers* [Conference session]. Catawba Regional Education Center - Education and Business Workforce Development Summit, Rock Hill, SC, United States.

Hall, V., Hartley, R., **Frady, K.** (2014, February 20). *Digitally supported pathways moving students into STEM fields* [Conference session]. SC Technical Education Association Annual Conference, Myrtle Beach, SC, United States.

Hartley, R., **Frady, K.** (2014, January 17). *STEM career pathways into manufacturing* [Conference session]. Aiken Technical College STEM Symposium, Aiken, SC, United States.

**Frady, K.**, Hartley R. (2013, November 13). *STEM career pathways into manufacturing* [Conference session]. 11<sup>th</sup> Annual Guidance Standards and Career Development Workshop, Greenwood, SC, United States.

Hartley, R., **Frady, K.** (2013, August 15). *Skilling up & scaling up the next gen workforce* [Conference session]. South Carolina Automotive Council, Columbia, SC, United States.

Zelaya, M.\*, **Frady, K.**, Gramopadhye, A., Castle, C. (2012, September 24-25). *Advancing the use of virtual reality environments in technology programs* [Conference session]. SC Technical College System Teaching and Learning with Technology Conference, Columbia, SC, United States.

**Frady, K.** (2011, October). *Facilitation of discussion boards to enhance online learning* [Conference session]. Greenville Technical College Semi-Annual Meeting, Greenville, SC, United States.

**Frady, K.** (2010, Summer). *Edublognology, blogging in the classroom* [Conference session]. Greenwood District 52, Professional Development Seminar, Greenwood, SC, United States.

**Frady, K.** (2009, September). *Online professional learning communities for career and technology education* [Conference session]. Greenville County, Career and Technology Education Annual Meeting, Greenville, SC, United States.

## Technical Reports

**Frady, K.** (2020). *Advancing South Carolina through educational access, equity, and opportunity*. White paper prepared for Clemson University College of Education.

**Frady, K.**, Sims, C. M., Carter, A. D., Kuchinke, K. P. (2019). *Clemson Master's of Human Resource Development Strategic Plan*. Presented to the Clemson University College of Education.

**Frady, K.**, Sims, C. M., Carter, A. D., Kuchinke, K. P. (2019). *Rebuilding and Growing Human Resource Development at Clemson University's College of Education: Analysis and Recommendations*. Presented to the Clemson University College of Education.

**Frady, K.** (2019). *Master's of Human Resource Development Self-Study Report*. 300-page report organizing and identifying existing MHRD program information including goals and objectives, learning outcomes, curriculum, program size and demographics, program resources, and overall program assessment.

**Frady, K.** (2019). *SAE International AWIM Program Evaluation Final Report: Project Continuum*. Evaluation report presented to SAE International.

**Frady, K.** (2017). *SAE International AWIM Program Evaluation Progress Report: Project Continuum*. Evaluation report presented to SAE International.

**Frady, K.** (2018). *College and Career Ready Regional Asset Map: A tool for mapping of college and career ready indicators in areas of Academic Preparedness, Teacher Indicators, Academic Tenacity, and College Knowledge to develop district scores and identify key areas for improvement*.

Development of this asset map was funded by the Economic Development Administration Make it in America Program.

## Work in Progress



**Frady, K.** (2020). *Developing elementary level demand-oriented engineering pedagogy through facilitation of engineering-focused project-based learning* [Manuscript submitted for publication]. Department of Educational and Organizational Leadership Development, Clemson University.

Brown, C., Brown, A., **Frady, K.**, Gallagher, E., Marcanikova, M., & Gramopadhye, A. (2020). *The effect of school poverty index on first college math course placement* [Manuscript submitted for publication]. Department of Education and Human Development, Clemson University.

**Frady, K.**, & Hughes, C., (2020). *Creating a sustainable, strategic, career development framework* [Manuscript in preparation]. Department of Educational and Organizational Leadership Development, Clemson University.

**Frady, K.** (2020). *Using strategic human resource development to bolster the skilled technical workforce* [Manuscript in preparation]. Department of Educational and Organizational Leadership Development, Clemson University.

**Frady, K.**, & Hughes, C., (2020). *Effect of person inputs and background on manufacturing career interest and pathways* [Manuscript in preparation]. Department of Educational and Organizational Leadership Development, Clemson University.

**Frady, K.** (2020). *Selecting and designing assessment to measure early engineering curriculum impact on application of engineering design and attitudes toward STEM* [Manuscript in preparation]. Department of Educational and Organizational Leadership Development, Clemson University.

**Frady, K.**, Brown, C., Brown, A., Gallagher, E., Gramopadhye, A. (2020). *Examining pre-engineering calculus achievement gaps using a district level organizational systems approach* [Manuscript in preparation]. Department of Educational and Organizational Leadership Development, Clemson University.

Walker, R.\*, Gallagher, E., **Frady, K.**, Brown, C., & Brown A. High school institutional factors as predictors of choosing engineering over related major at two- and four-year SC institutions. [Manuscript in preparation]. Department of Engineering and Science Education, Clemson University.

## **GRANT, CONTRACT, AND FOUNDATION PROPOSALS**

### ***External Funded***

National Science Foundation Research in the Formation of Engineers (RFE). *Research: Developing Engineering Experiences and Pathways (DEEP) in Engineering Technology Career Formation*. September 2018 – August 2021. PI. (60%). **\$274,879.**

National Science Foundation Research Traineeship (NRT). *NRT: Technology-Human Integrated Knowledge Education and Research (THINKER)*. September 2018 – August 2023. Senior Personnel (6%). **\$3,000,000.**

National Science Foundation Advanced Technological Education (ATE). *A Sustainable ATE Coordination Network for Enhancing Personalized Learning Using Virtual and Augmented Reality-based Technology Innovations in Technician Education*. Co-PI. (20%). **\$792,820.**

National Science Foundation INCLUDES. *NSF INCLUDES Statewide Consortium Supporting Underrepresented Populations in Precalculus by Organizational Redesign toward Engineering*. December 2017-November 2019. Co-PI (10%). **\$297,192.**

National Science Foundation. *Workshop: Reducing Attrition in Precalculus Pathways to Engineering Degrees (WRAPPED)*. August 2017-July 2018. Co-PI (30%). **\$49,711.**

National Science Foundation Advanced Technological Education. *Center for Aviation and Automotive Technological Education Using Virtual E-Schools (CA<sup>2</sup>VES): A Resource to Meet Technological Workforce Needs*. July 2015 – June 2018. Senior Personnel/Collaborator. (20%). **\$2,991,820.**

Department of Commerce-Economic Development Administration. Make it in America Challenge Grant Program. *Select SC: Accelerating SC Economic Development and Job Creation*. January 2014 – December 2018, Co-PI (50%). (\$3,924,610 total across all consortium partners and additional funding agencies Department of Labor-Employment and Training Administration, National Institute of Standards and Technology). **\$2,500,000 to Clemson University.**

SAE International. *AWIM Evaluation Plan: Project Continuum*. May 2016-August 2019. PI. (50%). **\$80,350.**

North Carolina Department of Public Instruction Career and Technical Education. *Manufacturing and Technical Digital Curriculum Partnership with EducateWorkforce*. August 2015-August 2017, PI. (34%). **\$47,405.**

South Carolina Department of Employment and Workforce. *SC Job Ready U: Workforce Fundamentals Digital Curriculum Partnership with EducateWorkforce*. August 2016-August 2017. PI. (34%). **\$100,680.**

Department of Labor, Trade Adjustment Assistance Community College and Career Training Grants Program. Round 4, AZ-RAMP UP. October 2014 – November 2018. Collaborator. (\$10,000,000 across all consortium partners). **\$112,428.00 to Clemson University.**

South Carolina Governor's School for Science and Math. *Accelerate Engineering Program Course Development*. June 2014 – June 2017. Co-PI (23%). **\$263,087.**

STEMLinx – South Carolina's One Stop Discovery Site for STEM Resources. South Carolina Department of Commerce. April 2014 – March 2015. Collaborator. **\$25,000.**

Department of Labor, Trade Adjustment Assistance Community College and Career Training Grants Program. Round 2, SC ACCELERATE, July 2012 – November 2016. (\$15,000,000 across all consortium partners). Collaborator. **\$1,731,186 to Clemson University.**

CUCWD-Duke Energy Foundation. *Clemson University Center for Workforce Development – Duke Energy Foundation Collaboration*. February 2013 – August 2014. Collaborator. **\$4,110,000.**

College of Engineering Duke Foundation. *Supporting Diversity, Minority Recruitment, and Engagement for STEM Initiatives Among Faculty and P-12 Education*. January 2014 – December 2015. Collaborator. **\$115,000.**

### ***Internal Funded***

Transformative Initiative for Generating Extramural Research (TIGER). Clemson University College of Engineering, Computing and Applied Science. *CU SUCCEEDS: STEM Faculty Development Research Initiative*. Co-PI. July 2021 – June 2022. \$35,000.

TIGERS ADVANCE Bridges to Success. PI. September – November 2019. \$1,500.

College of Education ADR Research Award Program. Clemson University College of Education. PI. January- May 2019. \$15,014.

Transformative Initiative for Generating Extramural Research (TIGER). Clemson University College of Engineering and Science. *Accelerating the data collection and analysis timeline for funded NSF INCLUDES Launch Pilot*. Co-PI. January- December 2018. \$14,631.

College of Education ADR Research Award Program. Clemson University College of Education. *Broadening Participation in Engineering in South Carolina: Factors Affecting College Placement among Engineering-Intending Students*. Co-PI. January- December 2018. \$6,069.

Transformative Initiative for Generating Extramural Research (TIGER). Clemson University College of Engineering and Science. Co-PI. January- May 2014. \$19,500.

## **CERTIFICATIONS & AWARDS**

- 2021 American Society for Engineering Education Conference Best in Division Award. *Developing two-year college student engineering technology career profiles*.
- 2019 Clemson University College of Education Milestone Award, Cumulative Grant Achievement, Honorary Distinction over \$5 million in grants
- 2019-2020 Clemson University College of Education Grant Fellow
- Spring 2019, Recognized at February 2019 Clemson University Board of Trustees Meeting by Associate Dean Research and Graduate Studies faculty in the College of Education as Top 3 Faculty Member
- Spring 2018, Recognized at February 2018 Clemson University Board of Trustees Meeting by Associate Dean Research and Graduate Studies faculty in the College of Education as Top 3 Faculty Member
- 2015 Online Learning Consortium Annual Conference Best in Track Award. *An insider's view: Using public policy to build and reinforce a national workforce development digital learning model*.
- South Carolina Educator Certificate; 2007-2029
  - Areas of Certification: Business, Marketing or Computer Technology
- Internet and Computing Core Certification
- Educational Testing Service Recognition of Excellence, Principles of Learning and Teaching
- 1999-2003 Legislative Incentive for Future Excellence Scholar

## **TEACHING & ADVISING**

### **TEACHING**

#### **Clemson University Courses**

- AL 8440 Survey of Research Methods in Intercollegiate Athletics (online)
- EDL 7530 Educational Evaluation (face-to-face and hybrid)
- EDL 8390 Applied Research and Evaluation in Higher Education (online)
- EDL 8850 Selected Topics in Educational Administration (hybrid)
- EDL 9550 Two-Year Colleges (hybrid)
- EDL 9910 Doctoral Dissertation Research
- HRD 8600 Instructional Materials Development (online)
- HRD 8800 Research Concepts and Skills (online)
- HRD 8900 Human Performance Improvement Instrumentation (online)
- HRD 8970 Human Resource Development Applied Research and Development (online)
- HRD 8490 Evaluation of Training and Development/HRD Programs (online)
- HRD 8450 Human Resource Development Learning Analytics (online)

#### **Community College Courses**

- CPT 101 Computer Technology (online, live, and hybrid formats)

## **High School Career and Technology Education Courses**

- Accounting
- Business Law
- Computer Applications 1 & 2
- Desktop Publishing
- Entrepreneurship
- Sports Marketing
- Web Design

## **ADVISING**

### **Chair Dissertation Committee**

Madeline Jurek, “Value Creation Stories: A Case Study of Professional Development Experiences for Fine Arts Educators,” October 2020. Chair

Mary Hanna, “Investigating New CTE Teachers’ Training and Support and How It Influences Teacher Efficacy,” June 2020. Chair.

Monica Kosanovich, “Impacts of Outcomes Based Funding on Resource Allocation: A Case Study of Senior Administrators in Colorado,” September 2019. Co-chair

### **Member on Dissertation Committee**

Michael Moody, “How social media influences students’ choice when selecting and institution of higher education,” April 2020.

Claire Stam, “The Impact of a Therapeutic Music Intervention on Junior Nursing Students' Perceived Stress,” July 2019.

Hagan Walker, “Examining the Relationship Between Research Climate and Faculty Productivity at an Emerging Academic Health Center in the Southeastern U.S.,” June 2019.

Galen DeHay, “Does Location Matter? Evaluating the Influence of Noncognitive Measures and Academic Performance Among Dual Enrollment Students by Program Location: A Multiyear Study,” April 2019.

Laura McMaster, "Impact of Institutional Culture of Women's Political Leadership Efficacy Development,” April 2016.

### **Ph.D. Students in Progress**

Clayton Porter, “Decision-Making Process of Hispanic Students Toward College Matriculation by Using Time Perspective Theory,” Projected graduation Spring 2022. Chair

## **SERVICE**

### **SERVICE TO PROFESSION**

- Associate Editor, School Science and Mathematics
- Manuscript review, Industrial and Commercial Training Journal, Fall 2020; Spring 2021
- Manuscript review, Interchange Journal, Spring 2019; Spring 2021
- Chapter review, *Redesigning Workforce Development for the Mature Workforce in Handbook of Research on Attracting, Maintaining, and Balancing a Mature Workforce*, Fall 2019
- Swiss National Science Foundation, Spark Evaluation Committee, Fall 2019, Spring 2020

- Education and Workforce Development Committee for the National Manufacturing Innovation Institute, Advanced Functional Fabrics of America at the Massachusetts Institute for Technology, Fall 2016-Spring 2019
- Association of Public and Land-Grant Universities Commission on Innovation Competitiveness, and Economic Prosperity, Committee Member, August 2016 – May 2018
- High Impact Technology Conference
  - Conference Chair, 2016
  - Marketing Committee Chair, 2015
  - Executive Committee 2014-2016
- American Society for Engineering Education Southeastern Section Annual Conference, Paper Review, Fall 2015
- Academy of Human Resource Development Annual Conference, Paper Review, Fall 2020
- National Science Foundation, Proposal Review Committee, Winter 2013, Winter 2014, Fall 2015, Spring 2016, Summer 2017, Spring 2018, Spring 2020
- National Science Foundation, College of Reviewers, Summer 2018-present
- U.S. Department of Education, Education Innovation and Research, Proposal Review Committee, Summer 2017
- American Society for Engineering Education Annual Conference, Paper Review, Fall 2017; Fall 2020

#### **OTHER NATIONAL, STATE AND REGIONAL SERVICE (Current and Previous)**

- Advisor, National Science Foundation Advanced Technological Education Project, RAMP, Clark College, Vancouver, WA, August 2015 – May 2016
- South Carolina Department of Education, Career and Technology Education, New Skills for Youth Initiative Advisory Team, Spring 2016
- Transform SC Higher Education Action Team, August 2014 – May 2015
- Anderson, Oconee, Pickens Showcase Board, Founding Member, August 2014 – May 2017
- Partnership for Academic and Career Education Board Member, August 2015 – May 2020
- South Carolina's Coalition for Mathematics and Science Board Member, August 2013 – May 2016
- Oconee County Work Ready Community Board of Advisors, August 2014 – June 2015
- Pickens Career and Technology Center Advisory Board, August 2014 - May 2018

#### **UNIVERSITY SERVICE**

- Clemson University TIGERS ADVANCE Ambassador, Fall 2019-present
- Chair, College of Education Associate Professor Search Committee, Fall 2019
- Chair, Educational & Organizational Leadership Development Curriculum Committee; Fall 2016-Spring 2021
- Chair, College of Education Curriculum Committee; Fall 2019-Spring 2021
- College of Education Curriculum Committee; Fall 2016-Spring 2021
- Clemson University Graduate Curriculum Committee; Fall 2016-Spring 2021
- Educational & Organizational Leadership Development Doctoral Committee; Fall 2016-present
- Master of Human Resource Development Committee; Spring 2017-present
- Engineering and Science Education Outstanding Graduate Researcher Awards Committee, Spring 2018, Spring 2020, Spring 2021
- College of Education Diversity Strategic Plan Committee; 2018-19

- Master of Human Resource Development Clinical Assistant Professor Search Committee, Fall 2016
- Educational & Organizational Leadership Chair Search Committee, Spring 2018
- Educational & Organizational Leadership, Master's of Human Resource Development Clinical Assistant Professor Search, Spring 2017

## **PROFESSIONAL EXPERIENCE**

**Assistant Professor, Clemson University, Clemson, SC**

**College of Education, Educational and Organizational Leadership Development**

**College of Engineering, Computing and Applied Sciences; Engineering and Science Education**

January 2016 – Present

- Conduct and disseminate substantive research into complex problems, ideas, concepts or theories and apply appropriate methodologies
- Contribute to the intellectual life of the College by engaging high quality teaching and advising students
- Engage in scholarly activities and creative endeavors which contribute to the academic mission of the University
- Develop innovative and attractive courses
- Initiate and develop innovative funding proposals and opportunities

**Clemson University Center for Workforce Development, Clemson, SC**

**National Science Foundation Advanced Technological Education Center for Aviation & Automotive Technological Education using Virtual E-Schools (CA<sup>2</sup>VES)**

**Faculty Director, June 2016 – May 2019**

*Director of Operations, August 2013 – June 2016*

*Assistant Director, January 2013-July 2013*

*Research Associate, March 2012-December 2012*

- Develop innovative programming that engages researchers, students, and the public in the work and ideas of significant theorists and practitioners across the workforce development and technological education fields.
- Create connections among scholars, schools, and disciplines across Clemson University and around the world.
- Support and lead scholarship and research efforts
- Support funding and proposal development

**Clemson University Center for Workforce Development, Clemson, SC**

**National Science Foundation Advanced Technological Education Center for Aviation & Automotive Technological Education using Virtual E-Schools (CA<sup>2</sup>VES)**

**Director of Operations, August 2013 – June 2016**

- Program management and supervision for Clemson University Center for Workforce Development (CUCWD)
- Guide development and assessment of innovative online educational material and integration of visualization tools
- Engage in proposal development in workforce development, visualization, simulation, and online education curriculum development
- Support development of visualization and learning modules for use in industry and P-20 organizations in collaboration with research partners

- Support dissemination activities: conference presentations, website, and journal articles
- Maintain and create partnerships with technical colleges, P-12 organizations, NSF ATE Centers, industry, and state and national entities

**Greenville Technical College, Greenville, SC**

**Adjunct Computer Technology Instructor, August 2007-May 2012**

- Prepared and delivered instruction utilizing technology in online, blended, and live environments
- Integrated technology enhanced media in online course to augment learning and motivation
- Maintained constant communication with a diverse population of students via various online techniques to support learning and gain an understanding of educational needs and objectives
- Developed expertise with various online course management systems and educational media tools

**Eastside High School, Taylors, SC**

**Career and Technology Education Teacher, August 2007-March 2012**

- Designed, developed, and delivered career and technology education curriculum in accordance with state and national standards integrating Web 2.0 applications, educational media, and course management systems
- Communicated frequently with parents, students, and faculty using innovative technology tools
- Maintained leadership roles and responsibilities a chairman of school improvement committees
- Delivered presentations and received invitations to present at various technology conferences
- Engaged with students to develop understanding of current trends and needs relevant to technology infused curriculum

**Blackbaud, Inc., Charleston, SC**

**Corporate Trainer, April 2004-January 2007**

- Designed and delivered professional training seminars in online, blended, and live environments
- Developed proficiency with online conferencing, collaboration, and remote solution software programs
- Implemented use of multiple audio and video technologies to meet customized training objectives
- Sustained relationships with clients through communication to establish and maintain expectations before, during, and after product delivery
- Arranged travel to client sites and submitted appropriate reports (80% travel)
- Designed and implemented reusable learning objects to facilitate online training sessions
- Received survey scores consistently above team averages and various company awards