DANIEL W. KNIGHT, PH.D.

EDUCATION

Ph. D. Awarded May 2003, The University of Tennessee, College: Education, Focus: Engineering Education GPA: 3.88
Dissertation: A Phenomenological Investigation of the Experiences of Engineering Upperclassmen in a Team Facilitator Training Program

M. S. Awarded August 1995, The University of Tennessee, College: Business, Focus: Industrial/Organizational Psychology, GPA: 3.86 Thesis: Personality Disorder Dimensions and Holland's Theory of Vocational Personality.

B. S. Awarded August 1989, The Louisiana State University, College: Arts & Sciences, Focus: Psychology, GPA: 3.23

PROFESSIONAL EXPERIENCE

2022 – Present **Associate Research Professor,** Department of Mechanical Engineering, and University of Colorado Boulder. Conducts education research and program evaluation for departments in the College and on a variety of grants at the university, state and federal level.

Dr. Knight continues to support the Design Center Colorado assessment plan, including revising, creating, and piloting assessment tools and procedures, conducting data analysis, and summarizing findings in assessment reports. In particular, his efforts focused on the *Capstone Design Course and Graduate Design Program.*

Dr. Knight developed and co-teaches with Mike Hannigan *MCEN 4/5291 Project Based Learning in Rural Schools* which is a technical elective in mechanical and environmental engineering that is taught in the Design Center. The course is focused on providing outreach in rural Colorado schools that incorporates air and soil quality projects into environmental science classes. The class trains and deploys CU students to serve as project mentors in the schools.

Additionally, Dr. Knight serves as a College of Engineering and Applied Science *resource for assessment and education research projects* and serves an engineering education research advisor on thesis committees. He also provides training and consultation on student design team selection and student teamwork.

Dr. Knight is also an *ABET coordinator for the Department of Mechanical Engineering as well as the Civil, Architectural, and Environmental Engineering Department*. ABET is the main accrediting body for university engineering programs in the United States.

2013 – 2022 ***Program Assessment and Research Associate,*** *Design Center Colorado, University of Colorado Boulder*
Designs and administers the Design Center Colorado assessment plan, including revising, creating, and piloting assessment tools and procedures, conducting data analysis, and summarizing findings in assessment reports. In particular, his efforts focused on the *Capstone Design Course and Graduate Design Program.* Dr. Knight has coauthored and published a number of engineering education research papers for the Center and presented at national and international conferences.

2001 – 2013 ***Engineering Assessment Specialist,*** *ITL Program and Laboratory, University of Colorado Boulder*
Designed and administered the ITL Program assessment plan, including revising, creating, and piloting assessment tools and procedures, conducting data analysis, and summarizing findings in assessment reports. In particular, his efforts focused on the *First-Year Engineering Projects* course and K-12 engineering outreach programs, including summer teacher workshops and children's classes, and the NSF GK-12 Fellows Program.

1999 – 2001 ***Team Member Selection Assessor****, TRW/KOYO Corporation, Vonore, TN.*
Duties included team member assessment and selection for an international manufacturing corporation. TRW/KOYO's Tennessee plant uses Total Quality Management principles to assemble automobile

steering mechanisms. Responsibilities included assessment and evaluation of potential employees in team exercises to determine suitability for work in a team environment.

1999 – 2001 ***Graduate Assistant****, Programs Abroad Office, The Center For International Education, The University of Tennessee*
Duties include advising and orienting both American and international exchange students. Co-taught pre-departure orientation course for American exchange students. Assisted in the organization of events to help acculturate new international students and to promote international culture within the community. Responsibilities included outreach efforts to promote study abroad opportunities to students.

1993 – 1999 ***Graduate Teaching Assistant,*** *University of Tennessee*
Worked for three years (1996-1999) in an interdisciplinary partnership between the College of Engineering and the College of Education to create curricula targeting interpersonal skills development in engineering undergraduates. Developed a course to place counseling graduate students as facilitators of Capstone student design teams. A second course was developed to train engineering upperclassmen to facilitate first-year student design teams. Dr. Knight's duties were in the area of coordination, facilitation, instruction, assessment, and research.

Worked for two years (1994-1996) on the development of course material and instruction of a Career Development Course. Course objectives were to assist students in the assessment of interests, abilities, values, and traits and to use this knowledge to select majors and improve careers. Duties included instruction, administering exams and grades.

Worked for one year (1993-1994) as an instructor of Introductory Psychology, duties included lecture and discussion of course material, administering exams and working with undergraduate proctors.

1991 – 1993 ***Research Assistant****, The University of Tennessee*
Involved in research in personality assessment. Participated in the development and validation of an instrument designed to assess a range of personality dimensions. Duties included data collection and analysis as well as regional and national conference presentations.

Also involved as a facilitator at the University of Tennessee's Management Development Center's Executive Development Program and the Master's of Business Administration (MBA) Program. Responsible for working with teams of managers and executives using several assessment tools designed to develop interpersonal and group decision-making skills. Responsibilities also included the assessment and preparation of developmental feedback for MBA students.

HONORS

1. ASEE Annual Conference, June 2023. Best Division Conference Paper, Engineering Leadership Development Division.
2. ASEE Annual Conference, June 2020. Best PIC Conference Paper, Distinguished Lecture.
3. ASEE Annual Conference, June 2019. Best PIC Conference Paper, Distinguished Lecture.
4. ASEE Annual Conference, June 2018. Best Division Paper Award.
5. ASEE Annual Conference, Rocky Mountain Section Conference, Denver, CO, April 2015. Best Conference Paper Award.
6. ASEE Annual Conference, June 2011. Best Division Paper Award.
7. ASEE Annual Conference, June 2003. Best Overall Conference Paper Award.

REFEREED PUBLICATIONS

Komarek, R., Bielefeldt, A.R., and Knight, D.W. 2021. Influences of Engineering Students' College Experiences on Leadership Skill Assurance. International Journal of Engineering Education. 37 (5), 1454-1465. http://dx.doi.org/10.14710/ijee

Komarek, R., Bielefeldt, A.R., and Knight, D.W. 2021. Multirater Feedback of Leadership of Underrepresented Groups in a Civil Engineering Capstone Design Course. Journal of Civil Engineering Education. 147 (4), https://doi.org/10.1061/(ASCE)EI.2643-9115.0000049.

Bielefeldt, A.R., Polmear, M., Knight, D., Canney, N. and Swan, C. 2021. Educating engineers to work ethically with global marginalized communities. *Environmental Engineering Science*. 38 (5), 320-330. DOI 10.1089/ees.2020.0269.

Polmear, M., Bielefeldt, A.R., Knight, D.W., Swan, C., and Canney, N.E. 2020. Exploratory Investigation of Personal Influences on Educators' Engagement in Engineering Ethics and Societal Impacts Instruction. *Science and Engineering Ethics*. 26 (6). https://doi.org/10.1007/s11948-020-00261-x

Bielefeldt, A.R., Lewis, J.W., Polmear, M., Knight, D., Canney, N. and Swan, C. 2020. Educating Civil Engineering Students about Ethics and Societal Impacts via Co-curricular Activities. *Journal of Civil Engineering Education*. 146 (4) DOI 10.1061/(ASCE)EI.2643-9115.0000021

Lauff, C.A., Knight, D., Kotys-Schwartz, D.A., and Rentschler, M.E. 2020.The role of prototypes in communication between stakeholders, *Design Studies*,Volume 66, Pages 1-34, ISSN 0142-694X, https://doi.org/10.1016/j.destud.2019.11.007.

Ford, J.D., Paretti, M.C., Kotys-Schwartz, D.A., Howe, S., Gewirtz, C., Deters, J., Chowdhury, T.M., Ott, R., Alvarez, N.E., Knight, D. and Hernandez, C., 2019. Transitioning from capstone design courses to workplaces: A study of new engineers' first three months. *International Journal of Engineering Education*, 35(6), pp.1993-2013. http://dx.doi.org/10.14710/ijee

Bielefeldt, A.R., Polmear, M., Knight, D.W., Canney, N.E. and Swan, C. 2019. Disciplinary Variations in Ethics and Societal Impact Topics Taught in Courses for Engineering Students. *ASCE Journal of Professional Issues in Engineering Education and Practice.* 145 (4). DOI: 10.1061/(ASCE)EI.1943-5541.0000415

Polmear, M., Bielefeldt, A.R., Knight, D.W., Canney, N.E. and Swan, C. Analysis of Macroethics Teaching Practices and Perceptions in Engineering: A Cultural Comparison. *European Journal of Engineering Education*. 44 (6). https://doi.org/10.1080/03043797.2019.1593323

Bielefeldt, A.R., Polmear, M., Canney, N., Swan, C., and Knight, D. 2018. Ethics Education of Undergraduate and Graduate Students in Environmental Engineering and Related Disciplines. *Environmental Engineering Science*. 35 (7): 684-695. DOI: 10.1089/ees.2017.0308

Bielefeldt, A.R., Polmear, M., Knight, D., Swan, C., Canney, N. 2018. Intersections between Engineering Ethics and Diversity Issues in Engineering Education. *Journal of Professional Issues in Engineering Education and Practice*. 144 (2). DOI: 10.1061/(ASCE)EI.1943-5541.0000360.

Bielefeldt, A.R., Polmear, M., Knight, D., Swan, C. and Canney N. 2017. Intersections between Engineering Ethics and Diversity Issues in Engineering Education. *Journal of Professional Issues in Engineering Education and Practice*. Published online Dec. 2017. DOI: 10.1061/(ASCE)EI.1943-5541.0000360.

Milford, J.B and Knight, D.W. 2017. Increasing the Use of Earth Science Data and Models in Air Quality Management. *Journal of Air & Waste Management Association*, VOL 67, 4, 431-444. https://doi.org/10.1080/10962247.2016.1248303

Bielefeldt, A.R., Polmear, M. Canney, N. Swan, C. and Knight D. 2017. Ethics Education of Undergraduate and Graduate Students in Environmental Engineering and Related Disciplines. *Environmental Engineering Science*. Published online Dec. 2017. DOI: 10.1089/ees.2017.0308

Bielefeldt, A.R., Canney, N., Swan, N., Polmear, M., and Knight. D. 2016. A Picture of Microethics and Macroethics Education of Biomedical Engineering Students in the United States. *Ethics in Biology, Engineering and Medicine*. 7 (1), 17-32. DOI: 10.1615/EthicsBiologyEngMed.2017018790

Bielefeldt, A.R., Canney, N., Swan, C., and Knight D. 2016. Contributions of Learning through Service to the Ethics

Education of Engineering Students. *International Journal for Service Learning in Engineering, Humanitarian Engineering and Social Entrepreneurship.* 11 (2), 1-17. https://doi.org/10.24908/ijsle.v11i2.6392

Collier, A.M. et al. Curricular Unit: Air Quality InQuiry (AQ-IQ). 2016. *Teach Engineering Digital Library,* https://www.teachengineering.org/curricularunits/view/cub_airquality_unit

Borrego, M., Froyd, J., and Knight, D. Accelerating Emergence of Engineering Education via the International Conference on Research in Engineering Education (ICREE). *Journal of Engineering Education,* October, 2007. 281-282. Retrieved from https://colorado.idm.oclc.org/login

Fortenberry, N., Sullivan, J.S., and Jordan, P.N. and Knight, D.W. Engineering Education Research Aids Instruction. *Science,* VOL 317, 31, August 2007. 1175-1176. DOI: 10.1126/science.1143834

Knight, D.W. and Sullivan, J.F. Integrating an Assessment Plan into a K-12/University Partnership. *PEERs Matter,* 2006, *National Science Teachers Association.*

Bullen F. and Knight, D. The Role of First year Engineering Experience (FYEE). *World Transactions on Engineering and Technology Education,* Vol 4, (2), 2005. pp. 219-223. ISSN 1446-2257.

Gall, K., Knight, D.W., Carlson, L.E., and Sullivan, J.F. Making the Grade with Students: The Case for Accessibility. *Journal of Engineering Education,* October 2003. 337-343. https://doi.org/10.1002/j.2168-9830.2003.tb00778.x

REFEREED CONFERENCE PROCEEDING PUBLICATIONS

Kotys-Schwartz D, Komarek R, Knight D. Exploration of role assignment in engineering design teams on leadership. ASEE 2023, June 25, 2023 - June 28, 2023, June 25, 2023

Tsai J, Knight D. Counterspaces: Underrepresented Students' Attempts to Find Community and Supportive Learning Spaces During a Global Pandemic. ASEE Annual Conference & Exposition, June 25, 2023 - June 28, 2023, June 28, 2023

Komarek, R., Bielefeldt, A.R., and Knight, D.W. Self-Assessment of Leadership Behaviors Over Time Among Students in A Mechanical Engineering Capstone Design Course. *Proceedings,* ASEE Annual Conference, June 2022. *Best Conference Paper, Engineering Leadership Development Division.*

Nowparvar, M., Ashour, O., Ozden, S.G., Knight, D.W., Delgoshaei, P., and Negahban, A. An Assessment of Simulation-Based Learning Modules in an Undergraduate Engineering Economy Course. *Proceedings,* ASEE Annual Conference, June 2022.

Steinbrenner, J.E., Kotys-Schwartz, D.A., and Knight, D.W. Teams, Tantrums, and Tears: Conflict Resolution in 2020, *Proceedings,* Capstone Design Conference, June 2022.

Tran, T., Polman, J. L., and Knight, D. (2022). Organizing outreach for cultural transformation: The design of a STEM education learning pathway. In Chinn, C., Tan, E., Chan, C., & Kali, Y. (Eds.). International Collaboration Toward Educational Innovation for All: *Proceedings,* The 16th International Conference of the Learning Sciences (ICLS), June 2022. Hiroshima, Japan.

Okorn, K., Tran, T., Polman, J., Knight, D. and Hannigan, M. Changing learning opportunities and outcomes with varying levels of remote and in-person engineering education outreach. *Proceedings,* Frontiers in Education Conference, October 2021.

Bielefeldt, A.R., Lewis, J.W., Polmear, M., Knight, D., and Swan, C. Alumni Reflect on Their Education About Ethical and Societal Issues. *Proceedings,* ASEE Annual Conference, June 2021.

Bielefeldt, A.R., Lewis, J.W., Polmear, M., Knight, D., and Swan, C. Engineering Alumni Rate the Impact of Co-curricular Activities on their Ethical Development. *Proceedings,* ASEE Annual Conference, June 2021.

Knight, D.W., Louie, B., and Tsai, J.Y., Transitioning to the Middle Years: Learning from RedShirt Engineering Students. *Proceedings*, ASEE Annual Conference, June 2021.

Polmear, M., Bielefeldt, A.R., Knight, D.W., and Swan, C. Undergraduate Engineering Students' Exposure to, and Valuation of, Ethics Through the Lens of Socialization. *Proceedings*, ASEE Annual Conference, June 2021.

Polmear, M., Bielefeldt, A.R., and Knight, D.W., Educators' Perceptions of the Influence of Academic Environment on Ethics Education: A Comparative Case Study of Two Engineering Departments. *Proceedings*, Frontiers in Education Conference, October 2021.

Polmear, M., Bielefeldt, A.R., Canney, N.E., Swan, C. and Knight, D.W. Student Perceptions of an Ethics Intervention: Exploration across Three Course Types. *Proceedings*, ASEE Annual Conference, June 2020. *Best PIC Conference Paper, Distinguished Lecture.*

Chowdhury, T.M., Knight, D., Kotys-Schwartz, D.A., Ford, J.D., Murzi, H. Using Competing Values Framework to Map the Development of Leadership Skills as Capstone Design Students Transition to the Workplace. *Proceedings*, ASEE Annual Conference, June 2020.

Bielefeldt, A.R., Polmear, M., Swan, C. Knight, D.W., Canney, N.E. Variations in Reflections as a Method for Teaching and Assessment of Engineering Ethics. *Proceedings*, ASEE Annual Conference, June 2020.

Polmear, M., Bielefeldt, A.R., Knight, D.W., Swan, C., and Canney, N.E. Exploration of the Ethics and Societal Impacts Teaching Practices of Anglo and Western European Educators. *Proceedings*, Research in Engineering Education Symposium. 2019. Cape Town, South Africa.

Knight, D.W., Hinojosa, L., Polman, J., Hannigan, M. An Air Quality Inquiry: A Curricular Approach to Preparing Student Mentors of Air Quality Research Projects in Rural Schools. 2019. *Proceedings*, Research in Engineering Education Symposium. Cape Town, South Africa.

Knight, D.W., Gewirtz, C. and Chowdhury, T. The Impact of Capstone Design Courses on New Engineering Graduates Preparation for Teamwork: A Mixed Methods Investigation. 2019. *Proceedings*, Research in Engineering Education Symposium. Cape Town, South Africa.

Canney, N.E., Bielefeldt, A.R., Polmear, M., Swan, C., and Knight, D.W. Development of an Ethics Survey Based on the Four-domain Development Diagram. *Proceedings*, ASEE Annual Conference, June 2019.

Polmear, M., Bielefeldt, A.R., Knight, D.W., Swan, C., and Canney, N.E. Hidden Curriculum Perspective on the Importance of Ethics and Societal Impacts in Engineering Education. *Proceedings*, ASEE Annual Conference, June 2019.

McConnell, K., Steinbrenner, J.E., and Knight, D. Push and Pull: Integrating Industry Across the Student Experience. *Proceedings*, ASEE Annual Conference, June 2019.

Bielefeldt, A.R., Zhao, D., Kulich, A.D., Polmear M., Canney, N.E., Swan, C., and Knight, D. Polmear, M., Canney, N., Swan, C., and Knight, D. Student Views on their Role in Society as an Engineer and Relevant Ethical Issues. *Proceedings*, ASEE Annual Conference, June 2019. *Best Pic IV Conference Paper, Distinguished Lecture.*

Kotys-Schwartz, D.A., Knight, D.W. and Steinbrenner, J.E. A Qualitative Investigation of Successes and Challenges with Assigned Roles in Capstone Design. *Proceedings*, Capstone Design Conference, June 2018.

Bielefeldt, A.R., Polmear, M., Swan, C., Knight, D.W., and Canney, N.E. Effective Ethics Education: Examining Differing Faculty Perspectives. *Proceedings*, ASEE Annual Conference, June 2018.

Bielefeldt, A.R., Polmear, M., Swan, C., Knight, D.W., and Canney, N.E. Ethics and Societal Impacts in the Education of Chemical Engineering Undergraduate and Graduate Students. *Proceedings*, ASEE Annual Conference, June 2018.

Komarek, R., Knight, D., Bielefeldt, A.R. Evolution of Leadership Behaviors During Two-Semester Capstone Design Course in Mechanical Engineering. *Proceedings*, ASEE Annual Conference, June 2018.

Polmear, M., Bielefeldt, A.R., Knight, D.W., Canney, N.E., and Swan, C. Faculty Perceptions of the Most Effective Settings and Approaches for Educating Engineering and Computing Students About Ethics and Societal Impacts. *Proceedings*, ASEE Annual Conference, June 2018.

Deters, J., Hernandez, C., Gewirtz, C., Kotys-Schwartz, D.A., Knight, D., Paretti, M.C., Arunkumar, S., Ford, J., Howe, S., Rosenbauer, L.M., and Alvarez, N.E. New Engineers' First Three Months: A Study of the Transition from Capstone Design Courses to Workplaces. *Proceedings*, ASEE Annual Conference, June 2018. *Best Paper Award.*

Bielefeldt, A.R., Polmear, M., Knight, D.W., Swan, C., and Canney, N.E. Education of Electrical Engineering Students about Ethics and Societal Impacts in Courses and Co-curricular Activities. *Proceedings*, Frontiers in Education Conference, October 2018.

Knight, D.W., Bielefeldt, A.R., Swan, C., Canney, N.E., and Polmear, M. Exploring the Range of Methods Used to Assess Engineering Students' Education on Ethical and Societal Impact Issues. *Proceedings*, Frontiers in Education Conference, October 2018.

Knight, D., Hannigan, M., Cheadle, L. and Hafich, K. Introducing University Laboratory Tools into K-12 Classrooms: Benefits and Challenges. *Proceedings*, Frontiers in Education Conference, October 2017.

Knight, D.W. and Kotys-Schwartz, D. A. Further Along the Engineering Pathway: The Impact of Design Spaces on the Development of Engineering Student Outcomes. *Proceedings*, Research in Engineering Education Symposium, July, 2017. Bogota, Colombia.

Knight, D.W., Savage, S., and Polmear, M.R. An Ethnographic Investigation into the Culture of an Engineering Without Borders USA Team During Preparation for a Design Project in Peru. In Research in Engineering Education Symposium. *Proceedings*, Research in Engineering Education Symposium, July, 2017. Bogota, Colombia.

Knight, D.W., Collier, A.M., Hannigan, M. and Hafich, K. Broadening and Sustaining an Air Quality K-12 Curriculum through a Digital Library and Undergraduate Service Learning Course, *Proceedings*, Frontiers in Education Conference Proceedings. October, 2016

Collier, A. M., Knight, D.W., Hafich, K. Hannigan, M., Graves, B. and Polmear, M. On the Development and Implementation of a Project-Based Learning Curriculum for Air Quality in K-12 Schools. *Proceedings*, Frontiers in Education Conference, October, 2015.

Knight, D.W., Hannigan, M., Polmear, M., Hafich, K. and Collier, A.M. Integrating a K-12 Education and Outreach Initiative into a Sustainability Research Network. *Proceedings*, ASEE Annual Conference, June 2015.

Collier, A. M., Knight, D. W., Hafich, K., Hannigan, M. P., Graves, B. and Polmear M., The North Fork Valley Project: A Project-Based Learning Curriculum to Support the Use of Next-Generation Monitoring Technologies in Rural Communities. Paper presented at ASEE Annual Conference, Rocky Mountain Section Conference, Denver, CO, April 2015. *Best Conference Paper Award*

Knight, D.W., Litchfield, K., and Javernick-Will, A. Engineers Without Borders An Empirical Investigation of Member's Defining Characteristics. *Proceedings*, Frontiers in Education Conference, October 2014.

Tsai, J.Y., Kotys-Schwartz, D.A. and Knight, D.W. The Powerful Construction of Norms Within Sophomore Engineering. *Proceedings*, Frontiers in Education Conference, October 2014.

Steckel, J., Quinones, P.A., Zarske, M.S. and Knight, D.W. Innovation Center: Preparing High School Students for the 21st Century Economy by Providing Resources and Opportunities to Create Genuine Projects with Industry Partners (work in progress). *Proceedings,* ASEE Annual Conference, June 2014.

Kotys-Schwartz, D.A., Daly, S.R., Yilmaz, S., and Knight, D.W. Evaluating the Implementation of Design Heuristic Cards in an Industry Sponsored Capstone Design Course. *Proceedings,* ASEE Annual Conference, June 2014.

Knight, D.W., Sullivan, J. Kotys-Schwartz, D., Myers, B. Louie, B. Luftig, J. Zarske, M and Hornback. J. The Impact of Inclusive Excellence Programs on the Development of Engineering Identity among First-year Underrepresented Students. *Proceedings,* ASEE Annual Conference, June 2013.

Ritter, C., Mickelson, A., Knight, D., Leventhal, J., and Espinoza, D. Presenting the NapoNet: Developing Global Competencies through Communications Technology in the Peruvian Amazon. *Proceedings,* ASEE International Forum, June 2013.

Montoya, L.D., Sandekian, R.and Knight, D. Integrating Engineering for Developing Communities into Engineering Education a Case Study. *Proceedings,* ASEE Annual Conference, June 2013.

Ennis, T.D., Sullivan, J. Louie, B. and Knight, D.W. Unlocking the Gate to Calculus Success: Pre-calculus for Engineers- an Assertive Approach for Readying Underprepared Students. *Proceedings,* ASEE Annual Conference, June 2013.

Yowell, J., Zarske, M., Knight, D.W. and Sullivan, J. Impact of TEAMS Clubs: An Afterschool Engineering Enrichment Program That Impacts K-12 Students and College Students Leaders. *Proceedings,* ASEE Annual Conference, June 2013.

Knight, D.W., Louie, B., and Hornback, J.M. The Teacher Effect: Explaining Gains in First-year Engineering Projects Courses, *Proceedings,* ASEE Annual Conference. June 2012.

Knight, D.W., Louie, B. and Glogiewicz, L. First Year Women on the Engineering Pathway: Research Strategies to Support Retention. *Proceedings,* ASEE Annual Conference, June 2011.

Knight, D.W., Ray-Earle, F.C. and Tway, N.S. An Assessment Plan for Evaluating a Four-Site Undergraduate Research Program in Biofuels and Biorefining Engineering. *Proceedings,* ASEE Annual Conference, June 2011.

Ennis, T.D., Milford, J. Sullivan, J. Myers, B. and Knight. D.W. Goldshirt Transitional Program: First-year Results and Lessons Learned on Creating Engineering Capacity and Expanding Diversity. *Proceedings,* ASEE Annual Conference, June 2011.

Zarske, M., Reamon, D. and Knight. D. Altruistic Engineering Projects: Do Project Based Service-learning Designs Impact Attitudes in First-year Engineering Students? *Proceedings,* ASEE Annual Conference, June 2011.

Louie, B., Knight, D. and Sullivan J. A Drop-in Tutoring Program to Support First-year Engineering. *Proceedings,* ASEE Annual Conference, June 2011. *Best Paper Award*

Rivale, Yowell, J. Aiken, J. Adhikary, S, Knight, D. and Sullivan J. Elementary Students' Perceptions of Engineers. *Proceedings,* ASEE Annual Conference, June 2011.

Knight, D.W., Corner, K. Louie, B., Shoals, A. and Cabrales. C. Successful Women Engineering Students: A Survey Assessment to Guide Our Efforts to Boost Women's Retention. *Proceedings,* ASEE Annual Conference, June 2010.

Ennis, T., Milford, J. Myers, B., Sullivan, J., Knight, D., Sieber, D. and Scarritt. A. Goldshirt Transitional Program: Creating Engineering Capacity and Expanding Diversity through a Performance-enhancing Year. *Proceedings,* ASEE Annual Conference, June 2010.

Kotys-Schwartz, D., Knight, D. and Pawlas, G. First-year and Capstone Design Projects: Is the Bookend Curriculum Approach Effective for Skill Gain? *Proceedings,* ASEE Annual Conference, June 2010

Zarske, M., Sullivan, J., Knight, D. and Yowell, J. The Impact on Engineering Graduate Students of Teaching in K-12 Engineering Programs, *Proceedings*, ASEE Annual Conference, June 2008.

Knight, D.W., Sullivan, J. and Louie. B. Expanding Understanding of First-year Engineering Student Retention and Team Effectiveness through Social Styles Assessment. *Proceedings*, ASEE Annual Conference, June 2007.

Zarske, M., Yowell, J. Sullivan, J., Knight, D. and Wiant D. The TEAMS Project: A Study of Grades 3-12 Engineering Continuum. *Proceedings*, ASEE Annual Conference, June 2007.

Rorrer, R.A.L., Knight, D.W., and Sanders, R. Tapping Hidden Talent. *Proceedings*, ASEE Annual Conference, June 2005.

Crimaldi, J.P. and Knight, D.W. A Laser-Based Flow Visualization System for Fluid Mechanics Instruction. *Proceedings*, ASEE Annual Conference, June 2005.

Knight, D.W., Carlson, L.E., and Sullivan, J.F. Gender Differences in Skills Development in Hands-On Learning Environments. *Proceedings*, Frontiers in Education Conference, November 2003.

Knight, D.W., Carlson, L.E., and Sullivan, J.F. Staying in Engineering: Impact of a Hands-On, Team-Based, First-Year Projects Course on Student Retention. *Proceedings*, ASEE Annual Conference, June 2003. *Best Overall Conference Paper Award*

Louie, B., Knight, D.W., and Sullivan, J.F. Women's Manufacturing Workshop Series that Supports Inclusiveness and Skill Building in Undergraduate Engineering Education. *Proceedings*, ASEE Annual Conference, June 2003.

Sullivan, J.F., Knight, D.W., and Carlson, L.E. Team Building in Lower Division Projects Courses. *Proceedings*, Frontiers in Education Conference, November 2002.

Knight, D.W., Sullivan, J.F., Poole, S.J. and Carlson, L.E. Skills Assessment in Hands-On Learning and Implications for Gender Differences in Engineering Education. *Proceedings*, ASEE Annual Conference, June, 2002.

Knight, D., Seat, E., Poppen, W. Parsons, R., Klukken, G. and Hector, M. An Evaluation of a Design team Facilitator Training Program for Engineering Upperclassmen. *Proceedings*, Frontiers in Education Conference, November 1999.

Knight, D., Poppen, W., Klukken, G., Parsons, J.R., Seat, J.E., "Training Upperclassmen to Facilitate Freshman Design Teams," *Proceedings*, ASEE Annual Conference, June, 1998.

REFEREED CONFERENCE PRESENTATIONS

Pliszka, H., Okorn, K., Hannigan, M., Polman, J., Tran, T., Knight, D., & Coffey, E. (2022). Air Quality InQuiry: Adapting air quality sensors for use in high school settings in the United States and Mongolia. Presented at Air Sensors International Conference, May 2022.

Polman, J. L., Tran, T. C., and Knight, D. W. Place-based air quality inquiry in U.S. rural contexts. In Miller, K. M. Data Literacy in Context: Culturally Oriented and Place-Based Learning Through Data. Symposium at the 2022 Annual Meeting of the American Educational Research Association, April, 2022.

Knight, D, Polman, J., & Kennedy, J. Making Science-Engineering Inquiry Culturally Relevant In Rural Colorado. Poster presented at American Society for Engineering Education Rocky Mountain Region Conference. May 2023, Golden Colorado.

Knight, D. & Miller, S. Design and Assessment of an Environmental and Social Justice Middle School Camp in a Community Impacted by Construction Disruptions.. Poster presented at American Society for Engineering Education Rocky Mountain Region Conference. May 2023, Golden Colorado.

INVITED TALKS AND PRESENTATIONS

Invited Talk: Colorado Science and Engineering Inquiry Collaborative (SCENIC Colorado), Knight D., Coffey, E. & Frischmon, C. Physics and Engineering Department Meeting, Fort Lewis College, March 2023.

Knight, D., Pradhan, I., Doxey, K., Crook, S., & Cochran, K. Exploring team science dynamics through social network analysis. Poster presented at NSF Neuronex Investigators Meeting, National Science Foundation Headquarters, November, 2023, Washington, D.C.

GRANTS

As PI or Co-PI

1. PI. Design & Development: Colorado Science and Engineering Inquiry Collaborative for Rural K-12 Outreach, National Science Foundation, Research in the Formation of Engineers Program, University of Colorado Boulder, $418,529, 2023-2026
2. PI. Integrating US and Mongolian K-12 Outreach efforts through Project Based Learning in Rural Schools. Department of Mechanical Engineering DEI Action Award, $15,000 2023-2024
3. PI. SCENIC 2023: Southwestern Colorado Expansion and Multilingual Support, Campus Outrach Award, University of Colorado Boulder, $24,000, 2023-2024
4. PI. SQIQ: Rural Colorado soil quality inquiry program development. Outreach Award, University of Colorado Boulder, $24,000, 2022-2023.
5. PI. An Air Quality Inquiry: Advancing Project Based Learning Projects in Rural Colorado Schools. Department of Mechanical Engineering DEI Action Award, $15,000 2022-2023.
6. PI. SCENIC Expansion: Developing Outreach Pathways in Rural Colorado. Outreach Award, University of Colorado Boulder, $24,000, 2021-2022.
7. PI. ESIQ: Expanding Engineering and Science Inquiry Projects in Rural Colorado, School of Education Place-Based Partnership Seed Grant, $10,000, 2021-2022.
8. PI. SCENIC: Science-Engineering Inquiry Collaborative In Rural Colorado. Outreach Award, University of Colorado Boulder, $24,000, 2020-2021.
9. Co-PI. SCENIC: Science-Engineering Inquiry Collaborative in Rural Colorado. School of Education Place-Based Partnership Seed Grant, University of Colorado Boulder, $10,000, 2020-2021. (PI: Joseph Polman).
10. PI. ESIQ: Engineering and Science Inquiry Projects in Rural Schools. Outreach Award, University of Colorado Boulder, $24,000, 2019-2020.
11. Co-PI. Collaborative Research: The Redshirt in Engineering Consortium. NSF SSTEM Award, University of Washington, $1,121,789, 2019-2022. (PI: Eve Riskin)
12. PI. AQIQ: Air Quality Inquiry Projects in Rural Schools. Outreach Award, University of Colorado Boulder, $24,000, 2018-2019.
13. PI. Expanding STEAM Kits for Children in Hospital Settings. Outreach Award, University of Colorado Boulder, $24,000, 2017-2018.
14. PI. Designing STEAM Kits for Children in Hospital Settings. Outreach Award, University of Colorado Boulder, $24,000, 2016-2017.
15. Co-PI. Collaborative Research: The Redshirt in Engineering Consortium. NSF SSTEM Award, University of Washington, $1,121,789, 2019-2022. (PI: Eve Riskin)
16. Co-PI. Accelerating Development of Engineering Education as a Discipline via Organized Dialogue, NSF ICREE, NSF Engineering Education Award, Texas A&M, $199,687, 2006-2008. (PI: Jeffrey Froyd)

As Engineering Education Researcher

1. Engineering Education Researcher. CCE-STEM: Collaborative Research: Efficacy of Macroethics Education in Engineering. NSF Cultivating Cultures for Ethical STEM Award, University of Colorado Boulder, $349,660, 2015-2021. (PI: Angela Bielefeldt)
2. Engineering Education Researcher. Collaborative Research: From School to Work: Understanding the Transition from Capstone Design to Industry, NSF Research in the Formation of Engineers Award, Virginia Polytechnic Institute and University, $226,384, 2016-2021. (PI: Marie Paretti)

3. Engineering Education Researcher. Collaborative Research: Gender Diversity, Identity and EWB-USA, NSF Research in Engineering Education Award, University of Colorado Boulder, $284,788, 2011-2016 (PI: Amy Javernick-Will)
4. Engineering Education Researcher. Natural Gas Development and its Effects On Air and Water Resources. NSF Sustainability Research Network Award, University of Colorado Boulder, $12,000,000, 2012-2019. (PI: Joseph Ryan)

As Program Evaluator

1. Evaluator. NeuroNex: From Odor to Action: Discovering Principles of Olfactory-Guided Natural Behavior, NSF DBI Award, J. PI, NSF Neuronex Award, University of Colorado Boulder, $17,000,000, 2020-2025. (PI: John Crimaldi)
2. Evaluator. SCC-IRG Track 1: Empowering Environmental Justice Communities with Smart and Connected Technology: Air and Noise Pollution, Wellbeing, and Social Relations in Times of Disruption. NSF Smart and Connected Communities Award, University of Colorado Boulder, $ 1,816,000, 2020-2024. (PI: Shelly Miller)
3. Evaluator. Increasing Student Retention in Chemical Engineering with Interactive Self-Study Modules. NSF IUSE Award, University of Colorado Boulder, $299,998, 2020-2023. (PI: John Falconer)
4. Evaluator. Overcoming critical skill gaps in residential and online STEM education via novel immersive, industry-aligned simulated environments. NSF ECR-EHR Core Research Award, The Pennsylvania State University, $831,276, 2020-2023. (PI: Ashkan Negahban)
5. Evaluator. REU Site: Intelligent Energetic Systems Engineering (INTENSE). NSF REU Award, The New Mexico Institute of Mining and Technology, $279,182, 2018-2022. (PI: Michael Hargather)
6. Evaluator. REU Site: Program in Biorefining and Biofuels, NSF REU Award, University of Colorado Boulder, $413,070, 2013-2017. (PI: Alan Weimer)
7. Evaluator. REU Site: Program in Biorefining and Biofuels, NSF REU Award, University of Colorado Boulder, $336,534, 2010-2013. (PI: Alan Weimer)
8. Evaluator. FESD Type-1: Electrical Connections and Consequences Within the Earth System, NSF Frontiers in Earth Systems Dynamics Award, University of Colorado Boulder, $4,500,000, 2011-2018. (PI: Jeffrey Forbes)
9. Evaluator. New GK-12: Engineering for Society - An Energy and Environmental Sustainability Research Pathway to Cultivate Engineering Leaders and Enrich Education for Disadvantaged Youth, NSF GK-12 Award, University of Colorado Boulder, $2,835,349, 2010-2018. (PI: Jacquelyn Sullivan)
10. Evaluator. Track 2, GK-12: Inspiring and Building Tomorrow's Workforce: A Grades 3-12 Engineering Continuum, NSF GK-12 Award, University of Colorado Boulder, $2,153,785, 2004-2010. (PI: Jacquelyn Sullivan)
11. Evaluator. GK-12: Creating an Integrated Engineering and Technology Education Continuum, NSF GK-12 Award, University of Colorado Boulder, $1,314,716, 1999-2004. (PI: Jacquelyn Sullivan)

THESIS COMMITTEES

1. Tehya Stockman, Ph.D., Environmental Engineering, 2023, University of Colorado Boulder. Thesis: Understanding Denver’s Air Quality Using Low-Cost Sensors
2. Aniya Khalili, Ph.D., Mechanical Engineering, 2023, University of Colorado Boulder. Thesis: Personal Exposure to Air Pollution Using Wearable Monitors
3. Kristen Okorn, Ph.D., Environmental Engineering, 2021, University of Colorado Boulder. Thesis: Facilitating Community Understanding of Air Quality.
4. Katherine McConnell, Ed.D., Education, 2019, University of Colorado Denver. Thesis: Structural and Cultural Factors Influencing Career Development in the CU Boulder Department of Mechanical Engineering.
5. Madeline Polmear, Ph.D., Civil Engineering, 2019, University of Colorado Boulder. Thesis: Faculty Perspectives and Practices Related to Engineering Ethics and Societal Impacts Education.
6. Carlye Lauff, Ph.D., Mechanical Engineering, 2018, University of Colorado Boulder. Thesis: Prototyping in the Wild: The Role of Prototypes in Companies.
7. Lucy Cheadle, M.S., Environmental Engineering, 2017, University of Colorado Boulder. Thesis: Applications of Low-Cost Air Pollution Sensors: Quantifying Neighborhood-Scale Spatial Variations of Ozone in Boulder, Colorado and Introducing University Laboratory Tools into High School Classrooms.
8. Janet Tsai, Ph.D., Mechanical Engineering, 2015, University of Colorado Boulder. Thesis: Actor-Networks of Sophomore Engineering: Durability and Change in Required Mathematics Courses.
9. Kaitlin Litchfield, Ph.D., Civil Engineering, 2014, University of Colorado Boulder. Thesis: Characterizing and Understanding the Growing Population of Socially Engaged Engineers through Engineers Without Borders-USA.

10. James Margolis, M.S., Mechanical Engineering, 2008, University of Colorado Boulder. Thesis: The Attrition of Engineering Graduates: An Exploratory Study on Influential Career Choice Factors.

UNDERGRADATUE RESEARCH APPRENTICES

Via the CU Boulder College of Engineering and Applied Science Discovery Learning Apprenticeship Program

1. Taylor Ferguson, Mechanical Engineering, 2023-2024
2. Katherine Stelwagon, Civil Engineering, 2022-2023
3. Bobbie Golik, Mechanical Engineering, 2021-2022
4. Elizabeth Wallace, Environmental Engineering, 2021-2022
5. Justin Stenman, Mechanical Engineering, 2020-2021
6. Jake Lewis, Environmental Engineering, 2019-2020
7. Christian Hernandez, Civil Engineering, 2018-2019
8. Rachel Moore, Applied Math, 2018-2019
9. Rebecca Bullard, Mechanical Engineering, 2017-2018
10. Madeline Polmear, Environmental Engineering, 2012-2013
11. Jordan Hornback, Architectural Engineering, 2011-2012
12. Lauren Glogiewicz, Mechanical Engineering, 2010-2011
13. Katherine Corner, Electrical Engineering, 2009-2010

TEACHING EXPERIENCE

1. 2016-Present. University of Colorado Boulder. Instructor of record for MCEN 4/5228 Project Based Learning in Rural Schools. Two-semester course is focused on preparing undergraduate and graduate students as K-12 environmental engineering outreach mentors in rural schools in Colorado. Students are instructed in environmental monitoring technology, pedagogy and associated curriculum to mentor three-month air and soil quality projects in high environmental science classes.
2. 2001-2013. University of Colorado Boulder. Guest lecturer for course, GEEN 1400 First Year Engineering Projects. Prepared lecturers and workshops on teamwork, assessment, communications skills and ethics for multiple sections of the course across twelve years.
3. 1996-1999. University of Tennessee Knoxville. Graduate teaching assistant for course, Engineering Design Team Facilitation, in an interdisciplinary partnership between the College of Engineering and the College of Education. Developed and taught a course to train engineering upperclassmen to facilitate first-year student design teams. Course became part of doctoral thesis.
4. 1994-1996. University of Tennessee Knoxville. Graduate teaching assistant for course, Career and Personal Development. Course objectives were to assist students in the assessment of interests, abilities, values, and traits and to use this knowledge to select majors and improve careers. Duties included instruction, administering exams and grades.
5. 1993-1994. University of Tennessee Knoxville. Graduate teaching assistant for course, Introductory Psychology. Duties included lecture and discussion of course material, administering exams and working with undergraduate proctors.

FELLOWSHIPS

Office for Outreach and Engagement's Community Perspectives program, 2024 Faculty Cohort

SERVICE

2002 – Present, Holiday Adopt-a-Family Coordinator, College of Engineering and Applied Science, University of Colorado. Coordinated Adopt a Family Program to provide holiday gifts for low socioeconomic families in partnership with Boulder County Public Health and gifts for families of long-term patients at Children's Hospital Colorado.

2023 – Present, Member of Department of Mechanical Engineering Diversity, Equity and Inclusion Working Group and Outreach sub-committee

2023 – Present, Reviewer, ASME Journal

2018 – Present, Provided accreditation support for ABET accreditation for Department of Civil, Environmental and Architectural Engineering, CU Boulder

2008 – Present, Provided accreditation support for ABET accreditation in Department of Mechanical Engineering, CU Boulder

2018 – 2023, Member of Department of Mechanical Engineering Undergraduate Committee
2016 – 2023, Member of Teaching Quality Framework Committee, Worked on the development of assessment methods for evaluating teaching quality at the University of Colorado Boulder.