

## ADAM R. CARBERRY

Office Address: Fulton Schools of Engineering  
The Polytechnic School  
7171 E. Sonoran Arroyo Mall  
Peralta Hall, 330 G  
Arizona State University  
Mesa, AZ 85212-6414

Phone: 480-727-5122 (work)  
781-307-7464 (mobile)

Fax: 480-727-1549

Email: adam.carberry@asu.edu OR arcarberry@gmail.com

URL Address: <https://webapp4.asu.edu/directory/person/1646960>

### EDUCATION

Ph.D., Engineering Education, Tufts University (January 2005 – August 2010)

Dissertation: Characterization Analysis of Engineering Learning-through-Service Students by Gender and Academic Year

Advisors: Dr. Hee-Sun Lee – Education (Chair)  
Dr. Judah Schwartz - Education  
Dr. Chris Rogers – Mechanical Engineering  
Dr. Chris Swan – Civil & Environmental Engineering  
Dr. Matthew Ohland – Engineering Education (Purdue University)

M.S., Chemistry, Tufts University (September 2002 – December 2004)  
Advisor: Dr. David Walt

B.S., Material Science Engineering (Minor: Chemistry), Alfred University (September 1998 – May 2002)

Thesis: Damage Initiation Mechanics in Woven Fiberglass Reinforced Epoxy Composites

Advisors: Dr. Rebecca DeRosa – Material Science & Engineering  
Dr. J. Stephen Mayes – Mechanical Engineering

## **RELEVANT WORK EXPERIENCE**

- Arizona State University – Polytechnic Campus, Mesa, AZ (August 2011 – present)  
Associate Professor – Fulton Schools of Engineering, The Polytechnic school (August 2017 – present)  
Assistant Professor – Fulton Schools of Engineering, The Polytechnic School (July 2014 – July 2017)  
Assistant Professor – College of Technology & Innovation, Department of Engineering & Computing Systems (August 2011 – July 2014)  
Affiliated Faculty Member – Learning Sciences Institute (2013 – 2015)
- Arizona State University – Polytechnic Campus, Mesa, AZ (September 2010 – August 2011)  
Postdoctoral Research Associate, Sponsor: Dr. Ann McKenna
- Tufts University Center for Engineering Education and Outreach (CEEEO), Medford, MA  
Research Assistant (May 2005 – August 2010)  
Student Teacher Outreach Mentorship Program (STOMP) Manager (September 2008 – May 2010)  
STOMP Fellow and Executive Board Member (September 2005 – May 2010)  
LEGO Engineering.com Content Developer (September 2005 – May 2008)  
LEGO Camp Counselor (May 2005 – September 2007)
- Tufts University, Medford, MA – Chemistry Department  
Research Assistant & Computer Technician (May 2003 – December 2004)  
Teaching Assistant (September 2020 – May 2004)
- Sikorsky Aircraft, Stratford, CT – Metallurgical Lab  
Junior Computist Internship (Summers of 2000 – 2002)
- Alfred University, Alfred, NY – Admissions  
Student Interviewer (2000 – 2002)

## **HONORS AND AWARDS**

- Top 5% Teaching Award (2015 – 2016)
- Barrett Honors Faculty at Arizona State University (2014 – 2016)
- Barrett Summer Scholars Outstanding Service Award (2015 & 2016)
- Frontiers in Education New Faculty Fellow Award (2012)
- ASEE Educational Research Methods Division Apprentice Faculty Award (2011)
- Tufts University Presidential Award for Citizenship and Public Service (2010)

## SUMMARY OF PUBLICATIONS

### PEER-REVIEWED JOURNAL PUBLICATIONS WHILE AT ARIZONA STATE UNIVERSITY

1. Bumblauskas, D., Carberry, A., & Sly, D. (2017). [Selling technical sales to engineering learners](#). *Advances in Engineering Education*, 6(1), 1-19.
2. Balta, N., Yerdelen-Damar, S., & Carberry, A.R. (2017). Vocational high school students' engineering epistemological beliefs. *International Journal of Engineering Education*, 33(1B), 420-429.  
\* Special Issue of Current Trends in K-12 Engineering Education
3. Carberry, A., Brunhaver, S., Csavina, K., & McKenna, A. (2016). Comparison of written versus verbal peer feedback for design projects. *International Journal of Engineering Education*, 32(2), 1458-1471.  
\* Special Issue associated with the Clive L. Dym Mudd Workshop IX: Design Thinking in Design Education, Claremont, CA
4. McKenna, A.F., Hynes, M.H., Johnson, A.M., & Carberry, A.R. (2015). [The use of engineering design scenarios to assess student knowledge of global, societal, economic, and environmental contexts](#). *European Journal of Engineering Education*, 1-15. DOI: 10.1080/03043797.2015.1085836
5. Carberry, A.R. & McKenna, A.F. (2014). [Exploring students conceptions of modeling and modeling uses in engineering design](#). *Journal of Engineering Education*, 103(1), 77-91. DOI: 10.1002/jee.20033
6. Danahy, E., Wang, E., Brockman, J., Carberry, A., Shapiro, B., & Rogers, C.B. (2014). [LEGO-based robotics in higher education: 15 years of student creativity](#). *International Journal of Advanced Robotic Systems*, 11(27), 1-15. DOI: 10.5772/58249
7. Carberry, A.R., Lee, H-S., & Swan, C.W. (2013). [Student perceptions of engineering service experiences as a source of learning technical and professional skills](#). *International Journal of Service Learning in Engineering*, 8(1), 1-17.
8. Carberry, A.R. & Ohland, M.W. (2012). [A review of learning-by-teaching for engineering educators](#). *Advances in Engineering Education: P-12 Education Special Issue*, 3(2), 1-17.
9. McKenna, A.F. & Carberry, A.R. (2012). [Characterizing the role of modeling in innovation](#). *International Journal of Engineering Education*, 28(2), 263-269.  
\* Special Issue associated with the Clive L. Dym Mudd Design Workshop VIII: Innovation and Entrepreneurship, Claremont, CA

## PEER-REVIEWED JOURNAL PUBLICATIONS PRIOR TO ARIZONA STATE UNIVERSITY

1. Lemons, G., Carberry, A., Swan, C., & Jarvin L. (2011). [The effects of service-based learning on metacognitive strategies during an engineering design task](#). International Journal for Service Learning in Engineering, 6(2), 1-18.
2. Lemons, G., Carberry A., Swan, C., Jarvin, L., & Rogers, C. (2010). [The benefits of model building in teaching engineering design](#). Design Studies, 31, 288-309. DOI: 10.1016/j.destud.2010.02.001
3. Carberry, A.R., Lee, H-S., & Ohland, M.W. (2010). [Measuring engineering design self-efficacy](#). Journal of Engineering Education, 99(1), 71-79. DOI: 10.1002/j.2168-9830.2010.tb01043.x
4. Carberry, A.R. & Church, W.J. (2009). [HS-STOMP: High School Student Teacher Outreach Mentorship Program](#). International Journal of Engineering Education, 25(3) 461-467.  
\* Special Issue of Outreach to Prospective Engineering Students

## BOOK CHAPTERS PUBLISHED

1. Carberry, A. & Baker, D. (2017). Cultural impacts on engineering. In J. Dori, Z. Mevareach, & D. Baker (Eds.), Cognition, metacognition and culture in STEM education. Springer.
2. Carberry, A. (2014). Investigating the Role teacher and student engineering epistemological beliefs play in engineering education. In J. Heywood & A. Cheville (Eds.), Philosophical perspectives on engineering and technological literacy, I (pp. 58-69). Original Writing Ltd., Dublin, Ireland.

## CONFERENCE PROCEEDINGS

1. Csavina, K., Carberry, A., Cunningham, P., & Harding, T. (2017). Work in progress: Examining the value of reflection in engineering practice and education. Submitted to American Society for Engineering Education Annual Conference & Exposition, Columbus, OH.
2. Carberry, A., Siniawski, M., Atwood, A., & Diefes-Dux, H. (2016). [Best practices for using standards-based grading in engineering courses](#). New Engineering Educators (NEE) Division – American Society for Engineering Education Annual Conference & Exposition, New Orleans, LA.
3. Csavina, K., Carberry, A., & Nethken, C. (2016). [Assessing student understanding of reflection in engineering education](#). Design in Engineering Education Division (DEED) – American Society for Engineering Education Annual Conference & Exposition, New Orleans, LA.
4. McKenna, A., Kellam, N., Lande, M., Brunhaver, S., Jordan, S., Bekki, J., Carberry, A., & London, J. (2016). [Instigating a revolution of additive innovation: An educational ecosystem](#)

[of making and risk taking](#). NSF Grantees Poster Session – American Society for Engineering Education Annual Conference & Exposition, New Orleans, LA.

5. Carberry, A., Kellam, N., Brunhaver, S., Sugar, T., & McKenna, A. (2015). Excavating the impact of product archaeology. Research in Engineering Education Symposium, Dublin, Ireland.
6. Krause, S.J., Baker, D.R., Carberry, A.R., Alford, T.L., Ankeny, C.J., Brooks, B.J., Koretsky, M., Waters, C., Gibbons, B.J. (2015). [The impact of two-way formative feedback and web-enabled resources on student resource use and performance in materials courses](#). American Society for Engineering Education. Materials Division – Annual Conference & Exposition, Seattle, WA. 10.18260/p.24886
7. Krause, S.J., Baker, D.R., Carberry, A.R., Alford, T.L., Ankeny, C.J., Koretsky, M., Brooks, B.J., Waters, C., Gibbons, B.J. (2015). [Effect of implementation of JTF engagement and feedback pedagogy on faculty beliefs and practice and on student performance](#). NSF Grantees Poster Session – American Society for Engineering Education Annual Conference & Exposition, Seattle, WA. 10.18260/p.23915
8. Turns, J.A., Sattler, B., Thomas, L.D., Atman, C.J., Bankhead, R.B., Carberry, A.R., Csavina, K.R., Cunningham, P.J., Faust, D.K., Harding, T.S., Yasuhara, K. (2015). [Reflecting on reflection: How educators experience the opportunity to talk about supporting student reflection](#). Educational Research Methods (ERM) Division – American Society for Engineering Education Annual Conference & Exposition, Seattle, WA. 10.18260/p.24660
9. Whitesel, C. & Carberry, A. (2015). [Measuring community college student's self-efficacy toward circuit analysis](#). Two Year College Division – American Society for Engineering Education Annual Conference & Exposition, Seattle, WA. 10.18260/p.24474
10. Whitesel C. & Carberry, A. (2015). [Community college students' self-efficacy and conceptual knowledge of circuit analysis](#). Two Year College Division – American Society for Engineering Education Annual Conference & Exposition, Seattle, WA. 10.18260/p.23706
11. Waters, C., Krause, S., Chan, C. & Carberry, A. (2015) Cyber learning applications in core materials courses. American Society for Engineering Education Southeast Section Conference, Tuscaloosa, AL.
12. Carberry, A.R., Henderson, M., & Johnson, N.G. (2014). [Work-in-Progress: Using scaffolded alternating practice and application to teach a use-inspired engineering design process](#). ASEE/IEEE Frontiers in Education Conference, Madrid, Spain. DOI: 10.1109/FIE.2014.7044291
13. Krause, S., Maass, S., Chan, C., Carberry, A., Waters, C., & Koretsky, M. (2014). [Web-enabled formative feedback and learning resources for enhancing student attitude, achievement, and persistence](#). ASEE/IEEE Frontiers in Education Conference, Madrid. DOI: 10.1109/FIE.2014.7044480

14. Atwood, S., Siniawski, M., & Carberry, A. (2014). [Using standards-based grading in engineering project courses](#). DEED – American Society for Engineering Education Annual Conference & Exposition, Indianapolis, IN. AC 2014-8810
15. Rathore, G., Coso, A., & Carberry, A. (2014). [Engaging ASEE student membership through the creation of a graduate student-inclusive ASEE conference program](#). Student Division – American Society for Engineering Education Annual Conference & Exposition, Indianapolis, IN. AC 2014-8556
16. Pawley, A.L., Carberry, A.R., Carnasciali, M.I., Daly, S.R., Gorlewicz, J.L., Herman, G.L., Hynes, M.M., Kellam, N.N., Jordan, S.S., Lande, M., Verleger, M.A., & Yang, D. (2014). [The PEER collaborative: Supporting engineering education research faculty with near-peer mentoring unconference workshops](#). Continuing Professional Development Division – American Society for Engineering Education Annual Conference & Exposition, Indianapolis, IN. AC 2014-9048
17. Krause, S.J., Baker, D.R., Carberry, A.R., Alford, T.L., Ankeny, C.J., Maass, S., Koretsky, M., Gibbons, B.J., Brooks, B.J., Gilbuena, D.M., Waters, C. & Stuart, J. (2014). [Characterizing and addressing student learning issues and misconceptions \(SLIM\) with muddiest point reflections and fast formative feedback](#). Materials Division – American Society for Engineering Education Annual Conference & Exposition, Indianapolis, IN. AC 2014-10445
18. Krause, S.J., Baker, D.R., Carberry, A.R., Alford, T.L., Ankeny, C.J., Maass, S., Koretsky, M., Gibbons, B.J., Brooks, B.J., Gilbuena, D.M., Waters, C., & Stuart, J. (2014). [JTF web-enabled faculty and student tools for more effective teaching and learning through frequent formative feedback](#). NSF Grantees Poster Session – American Society for Engineering Education Annual Conference & Exposition, Indianapolis, IN. AC 2014-10148
19. Lewis, K., Moore-Russo, D., Kremer, G., Tucker, C., Simpson, T., Zappe, S., McKenna, A., Johnson, A., Carberry, A., Chen, W., Gatchell, D., Shooter, S., Williams, C., Paretto, M., and McNair, L. (2014). [Assessment of product archaeology as a framework for contextualizing engineering design](#). NSF Grantees Poster Session – American Society for Engineering Education Annual Conference & Exposition, Indianapolis, IN. AC 2014-8971
20. Amresh, A., Carberry, A. R., & Femiani, J. (2013). [Evaluating the effectiveness of flipped classrooms for teaching CS1](#). ASEE/IEEE Frontiers in Education Conference, Oklahoma, City, OK. 733-735. DOI: 10.1109/FIE.2013.6684923
21. Carberry, A. R., Krause, S., Ankeny, C. J., & Waters, C (2013). [“Unmuddying” course content using muddiest point reflections](#). ASEE/IEEE Frontiers in Education Conference, Oklahoma, City, OK. 937-942. DOI: 10.1109/FIE.2013.6684966
22. Hynes, M., Carberry, A., Bekki, J., Lande, M., & McKenna, A. (2013). What do engineers need to know: On the economics of product design, supply chain, and manufacturing. Research in Engineering Education Symposium, Kuala Lumpur, Malaysia.

23. Carberry, A., Hynes, M. & Danahy, E. (2013). [Using digital workbooks to collect design process data](#). DEED – American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA. AC 2013-5866
24. Kolar, H., Carberry, A., & Amresh, A. (2013). [Measuring computing self-efficacy](#). ERM – American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA. AC 2013-5925
25. Sly, D., Bumblauskas, D., & Carberry, A. (2013). [Evaluation of perceptual changes in an engineering sales program](#). Industrial Engineering Division – American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA. AC 2013-7050
26. Krause, S., Carberry, A. Waters, C., Stuart, J., Weeks, P., & Baker, D. (2013). [Muddiest point formative feedback with YouTube, Blackboard, Class Warm-ups and Word Clouds](#). Materials Division – American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA. AC 2013-7130
27. Krause, S., Carberry, A., Koretsky, M., Brooks, B., Gilburena, D., Waters, C., & Stuart, J. (2013). [Just-in-Time-Teaching with Interactive Frequent Formative Feedback \(JiTTIFFF\) for cyber learning in core materials courses](#). NSF Grantees Poster Session – American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA. AC 2013-7863
28. Lewis, K., Moore-Russo, D., Kremer, G., Tucker, C., Simpson, T., Zappe, S., McKenna, A., Carberry, A., Chen, W., Gatchell, D., Shooter, S., Williams, C., Paretti, M., and McNair, L. (2013). [The development of product archaeology as a platform for contextualizing engineering design](#). NSF Grantees Poster Session – American Society for Engineering Education Annual Conference & Exposition, Atlanta, GA. AC 2013-5989
29. Siniawski, M.T., Carberry, A.R., & Noorani, R.I. (2013). [A project-based approach for a design and manufacturing laboratory course](#) (pg. 55-63). American Society for Engineering Education Pacific Southwest Section Conference, Riverside, CA.
30. Siniawski, M.T., Carberry, A.R., & Ula, N. (2013). [Work in Progress: Stepping back and letting students take the lead – Student-led projects for a first-year introduction to engineering course](#) (pg. 53-54). American Society for Engineering Education Pacific Southwest Section Conference, Riverside, CA.
31. Kolar, H., Carberry, A., & Amresh, A. (2013). [Assessing student computing self-efficacy: A pilot study](#). Annual Meeting of the American Educational Research Association, San Francisco, CA.
32. Carberry, A.R. & Amresh, A. (2012). [Work in Progress – Teaching game design and robotics together: A natural marriage of computing and engineering design in a first year engineering course](#). ASEE/IEEE Frontiers in Education Conference, Seattle, WA. F1F, 1-2. DOI: 10.1109/FIE.2012.6462478

33. Carberry, A.R., Siniawski, M., & Dionisio, J. (2012). [Standards-based grading: Preliminary studies to quantify changes in student affective and cognitive behaviors](#). ASEE/IEEE Frontiers in Education Conference, Seattle, WA. F3F, 1-5. DOI: 10.1109/FIE.2012.6462211  
Nominated for Ben Dasher Award for Best Conference Paper
34. Gerber, E., Martin, C.K., Carberry, A.R., Kramer, E. & Braunstein, J. (2012). [Work in Progress – Developing an Innovation Self-Efficacy \(ISE\) survey](#). ASEE/IEEE Frontiers in Education Conference, Seattle, WA. T2E, 1-3. DOI: 10.1109/FIE.2012.6462435
35. Sattler, B., Carberry, A.R., & Thomas, L. (2012). [Peer Mentoring: Linking the value of a reflective activity to graduate student development](#). ASEE/IEEE Frontiers in Education Conference, Seattle, WA. T1G, 1-6. DOI: 10.1109/FIE.2012.6462332
36. Carberry, A., McKenna, A., & Dalrymple, O. (2012). [Eliciting students' interpretations of engineering representations](#). Multidisciplinary Engineering Division – American Society for Engineering Education Annual Conference & Exposition, San Antonio, TX. AC 2012-3218
37. Sattler, B., Carberry, A., & Thomas, L. (2012). [Graduate student peer mentoring: A means for creating an engineering education research community](#). Graduate Studies Division – American Society for Engineering Education Annual Conference & Exposition, San Antonio, TX. AC 2012-3258
38. Siniawski, M., Carberry, A., & Dionisio, J. (2012). [Standards-based grading: An alternative to score-based assessment](#). American Society for Engineering Education Pacific Southwest Section Conference, San Luis Obispo, CA.
39. Carberry A.R. & McKenna, A.F. (2011). [Work in Progress – Analyzing engineering student conceptions of modeling in design](#). ASEE/IEEE Frontiers in Education Conference, Rapid City, SD. S4F 1-2. DOI: 10.1109/FIE.2011.6142760
40. Thomas, L.D., Sattler, B., & Carberry, A.R. (2011). [Work in Progress – Developing a graduate consortium in engineering education](#). ASEE/IEEE Frontiers in Education Conference, Rapid City, SD. T2D 1-3. DOI: 10.1109/FIE.2011.6143022
41. Heywood, J., Carberry, A., & Grimson, W. (2011). [A philosophy of engineering education: Selected annotated bibliography](#). Produced for the Exploring the Philosophies of Engineering and Engineering Education Workshop. ASEE/IEEE Frontiers in Education Conference, Rapid City, SD. PEEE, 1-26. DOI: 10.1109/FIE.2011.6143134
42. Carberry, A. & McKenna, A. (2011). Engineering students' conceptions of model uses in design. Paper presented at the Research in Engineering Education Symposium, Madrid, Spain.
43. Carberry, A.R., Bumblauskas, D.P., Coso, A.E., & Torres-Ayala, A.T. (2011). [Student satisfaction with ASEE activities and its impact on ASEE Student Membership](#). Graduate Studies Division – American Society for Engineering Education Annual Conference & Exposition, Vancouver, BC, Canada. AC 2011-343



44. Carberry, A.R., McKenna, A.F., Linsenmeier, R.A., & Cole, J. (2011). [Exploring engineering students' conceptions of modeling](#). ERM – American Society for Engineering Education Annual Conference & Exposition, Vancouver, BC, Canada. AC 2011-311
45. Carberry, A.R. & Swan, C.W. (2011). [Developing an instrument to measure the impact of service on technical and professional learning outcomes](#). ERM – American Society for Engineering Education Annual Conference & Exposition, Vancouver, BC, Canada. AC 2011-41
46. Lemons, G., Carberry, A., & Swan, C. (2011). [Cognitive styles and design strategies of engineering students during a hands-on model-building design task](#). American Society for Engineering Education Middle Atlantic Section Spring Conference, Farmingdale, NY.  
Best Section Paper Award
47. Carberry, A.R. (2010). [Work in progress – Assessing engineering service students' characteristics](#). ASEE/IEEE Frontiers in Education Conference, Washington, DC. T2D 1-3. DOI: 10.1109/FIE.2010.5673208
48. Carberry, A., Swan, C., & Ohland, M. (2010). [A pilot validation study of the epistemological beliefs assessment for engineering \(EBAE\): First-year engineering student beliefs](#). American Society for Engineering Education Annual Conference & Exposition, Louisville, KY. AC 2010-91
49. Head, E. & Carberry, A. (2010). [What can teachers learn from engineering experts? Using a three-phase model to improve K-12 teacher's knowledge of engineering and technology](#). K-12 & Pre-College Engineering Division – American Society for Engineering Education Annual Conference & Exposition, Louisville, KY. AC 2010-207
50. Lemons, G., Carberry, A., Swan, C., Rogers, C., & Jarvin, L. (2010). [The importance of problem interpretation for engineering students](#). DEED – American Society for Engineering Education Annual Conference & Exposition, Louisville, KY. AC 2010-567  
Nominated for best paper in the Design in Engineering Education Division
51. Carberry, A., Lemons, G., Swan, C., Jarvin, L., & Rogers, C. (2009). Investigating engineering design through model-building. Paper presented at the Research in Engineering Education Symposium, Queensland, Australia.
52. Lemons, G., Carberry, A., Swan, C., Jarvin, L., & Rogers, C. (2009). Using a hands-on design task to compare the design process of service learning and non-service learning engineering students. Paper presented at the Research in Engineering Education Symposium, Queensland, Australia.
53. Carberry, A., Ohland, M., & Lee, H. (2009). [Developing an instrument to measure engineering design self-efficacy](#). ERM – American Society for Engineering Education Annual Conference & Exposition, Austin, TX. AC 2009-206  
\* Nominated for best paper in the Educational Research Methods Division

54. Carberry, A., Portsmore, M., & Rogers, C. (2007). [The effects of STOMP on student's understandings of and attitudes toward the engineering design process](#). ERM – American Society for Engineering Education Annual Conference & Exposition, Honolulu, HI. AC 2007-1137
55. Carberry, A., & Hynes, M. (2007). [Underwater LEGO Robotics: Testing, evaluation, and redesign](#). K-12 & Pre-College Division – American Society for Engineering Education Annual Conference & Exposition, Honolulu, HI. AC 2007-2003
56. Bers, M., Rogers, C., Beals, L., Portsmore, M., Staszowski, K., Cejka, E., Carberry, A., Gravel, B., Hynes, M., Anderson, J., & Barnett, M. (2006). Innovative Session: Early childhood robotics for learning. International Conference on the Learning Sciences. Bloomington, IN.

#### **CONFERENCE ABSTRACTS AND DRAFTS UNDER REVIEW OR PAPERS TO BE PRESENTED**

1. Lee, E., Carberry, A., Atwood, S., Deifes-Dux, H., & Siniawski, M. (accepted). Faculty perceptions before and after implementation of standards-based grading. Submitted to Research in Engineering Education Symposium, Bogata, Columbia, July 6-8.

#### **CONFERENCE PAPERS WITHOUT PROCEEDINGS**

1. Vaishnav, S. & Carberry, A. (2017). Student perspectives on standards-based grading used in engineering project-based courses. American Educational Research Association Annual Conference, San Antonio, TX.
2. McKenna, A.F., Kellam, N., Lande, M., Brunhaver, S., Jordan, S., Carberry, A., Bekki, J. & London, J. (2016). Capturing the ecosystem and culture to support risk-taking and additive innovation: Laying the groundwork. AAAS Envisioning the Future of Undergraduate STEM Education (EnFUSE): Research and Practice Symposium, Washington, DC.
3. Tatistcheff, R., Church, W., & Carberry, A. (2008). Students Teaching Teachers: Rethinking Professional Development for Technology. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.

#### **OTHER PUBLICATIONS**

1. Carberry, A., Klassner, F., Schafer, B., and Varnado, T. (2014). LEGO® product research: A literature review. White Paper commissioned by LEGO Education.
2. Hynes, M., Portsmore, M., Dare, E., Milto, E., Rogers, C., Hammer, D., & Carberry, A. (2011). [Infusing engineering design into high school STEM courses](#). White Paper for the National Center for Engineering and Technology Education (NCETE).

3. Portsmouth, M., Carberry, A., & Hynes, M. (November 15, 2010). [Concept and Skill Progression for Engineering Design](#). Massachusetts Department of Elementary and Secondary Education – Technology/Engineering Concept and Skill Progressions.

## **DISSERTATION & QUALIFYING PAPERS**

Carberry, A. (2009). Measuring Engineering Design Self-Efficacy. Unpublished Qualifying Paper, Tufts University.

Carberry, A. (2008). Learning-by-teaching as a pedagogical approach and its implications on engineering education. Unpublished Qualifying Paper, Tufts University.

Carberry, A. (2010). Characterizing learning-through service students in engineering by gender and academic year. ProQuest LLC, Tufts University.

## **SUMMARY OF RESEARCH SUPPORT**

### **TOTAL APPROVED EXTERNAL FUNDING WHILE AT ARIZONA STATE UNIVERSITY**

1. Co-PI – “Transforming Engineering Education through Student and Faculty Mindset Development: Establishing a National Engineering Faculty Training Collaborative and Model EM University,” Ann McKenna, James Collofello, Scott Shrake, Brent Sebold, Tirupalavanam Ganesh, Jennifer Bekki, Samantha Brunhaver, and Jeremi London, Kern Family Foundation. \$2,860,039 (5% recognition; \$143,000). Funded 1/16 – 12/17.
2. PI – “Making Grades Meaningful – Standards-based Grading for Engineering Project Courses,” Matthew Siniawski – Loyola Marymount University; Sara Atwood – Elizabethtown College; and Heidi Diefes-Dux – Purdue University, National Science Foundation’s Improving Undergraduate STEM Education (IUSE): Education and Human Resources (EHR) program, DUE-1503794, \$248,893; \$50,478 sub-awards to other institutions (100% recognition; \$248,893). Funded 4/15 – 3/17.
3. ASU Education Lead – “Nanosystems Engineering Research Center for Off-Grid Nanotechnology Enabled Water Treatment (NEWTE),” Pedro Alvarez\*, Naomi Halas, Qilin Li – Rice University; Paul Westerhoff – ASU; Jorge Gardea-Torresdey – University of Texas at El Paso; and Menachem Elimelech – Yale University, National Science Foundation’s Engineering Research Centers (ERC), EEC-1449500, \$3,222,904 (8% recognition; \$49,607). Funded 9/15 – 8/20.
4. Senior Personnel – “Instigating a Revolution of Additive Innovation: An Educational Ecosystem of Making and Risk Taking,” Ann McKenna\*, Nadia Kellam, Micah Lande, Shawn Jordan, Jennifer Bekki, and Jeremi London, National Science Foundation’s Improving Undergraduate STEM Education (IUSE)/Professional Formation of Engineers (PFE): Revolutionizing Engineering Departments (RED) program, EEC-1519339, \$1,993,593 (9% recognition; \$179,423). Funded 7/15 – 6/20.

5. PI – “Enhancing a Project-based Curriculum Spine through Reflective Activities,” Kristine Csavina, Leona M. and Harry B. Helmsley Charitable Trust c/o University of Washington. \$187,940 (50% Year 1 recognition; \$35,000; 100% Year 2 recognition; \$130,000). Funded 8/14 – 7/16.
6. Co-PI – “Collaborative Research: Assessment of Product Archaeology as a Platform for Contextualizing Engineering Design,” Kemper Lewis\* – University of Buffalo; Ann McKenna – ASU; Timothy Simpson, Sarah Zappe, Conrad Tucker, and Gul Kremer – Pennsylvania State University; Christopher Williams, Marie Parette, and Lisa McNair – Virginia Tech; Deborah Moore-Russo, Wei Chen, and David Gatchell – Northwestern University; and Steven Shooter – Bucknell University, National Science Foundation’s Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics (TUES) Program (Type II) – DUE-1225836, \$246,774 (25% recognition; \$51,016). Funded 9/12 – 8/14.
7. Co-PI – “Collaborative Research: Just-in-Time Teaching with Interactive Frequent Formative Feedback (JiT<sup>2</sup>IFFF) for Cyber Learning in Core Materials Courses,” Stephen Krause\*, Terry Alford, Dale Baker, Candace Chan, and Eugene Judson – ASU; Milo Koretsky and Brady Gibbons – Oregon State University; Cindy Waters – North Carolina A&T; and Joe Stuart – Oregon Institute of Technology, National Science Foundation’s Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics (TUES) program (Type II) – DUE-1226325, \$425,132 (12% recognition; \$61,694). Funded 9/12 – 8/15.

#### **TOTAL APPROVED INTERNAL FUNDING WHILE AT ARIZONA STATE UNIVERSITY**

1. Co-PI – “Embedding entrepreneurial mindset into a use-inspired design course,” Samantha Brunhaver, KEEN Professorship Mini-Grant, Arizona State University Ira A. Fulton Schools of Engineering, \$11,392. Funded 8/17 – 12/17.
2. PI – “Measuring computing self-efficacy, anxiety, and engagement,” Scholarship Support and Enhancement Grant, Arizona State University College of Technology and Innovation, \$7,000. Funded 10/11 – 6/12.

#### **EXPERIENCE ON EXTERNALLY FUNDED PROJECTS PRIOR TO ARIZONA STATE UNIVERSITY**

1. Post-Doctoral Research Associate – “Exploring the role of computational adaptive expertise in design and innovation,” Ann McKenna\*, Matthew Glucksberg, Robert Linsenmeier, and Uri Wilensky – Northwestern University, National Science Foundation’s Innovations in Engineering Education, Curriculum, and Infrastructure (IEECI) Program – EEC-1110453 (formerly EEC-00648316), \$940,667. Funded 8/06 – 8/11, Supplement \$93,586. Funded 8/11 – 5/12.
2. Graduate Research Associate – “The role of service-learning: Improving engineering education; attracting women into engineering,” Christopher Swan\*, Linda Jarvin, and Chris Rogers – Tufts University, National Science Foundation’s Innovations in Engineering

Education, Curriculum, and Infrastructure (IEECI) Program – EEC-0835981, \$541,552.  
Funded: 9/08 – 9/12.

## POSTER SESSIONS

1. Shooter, S., Kim, C., Tranquillo, J., Lewis, K., Simpson, T., McKenna, A., Moore-Russo, D., Kremer, G., Tucker, C., Zappe, S., Carberry, A., Chen, W., Gatchell, D., Paretto, M., McNair, L. & Williams, C. (2014). Product Archaeology – Integrating Global Societal Environmental and Economic (GSEE) Considerations in Design, NCIIA OPEN Conference, San Jose, CA.
2. McKenna, A., Carberry, A., Cole, J., Glucksburg, M., Linsenmeier, R., Molina, E., & Wilensky, U. (2011). Exploring the role of computational adaptive expertise (CADEX) in design and innovation. Poster presented at the National Science Foundation Engineering Education Awardees Conference, Arlington, VA.
3. McKenna, A., Carberry, A., Cole, J., Glucksburg, M., Linsenmeier, R., Molina, E., & Wilensky, U. (2011). Exploring the role of computational adaptive expertise (CADEX) in design and innovation. Poster presented at the National Science Foundation Engineering Education Awardees Conference, Reston, VA.
4. Swan, C., Jarvin, L., Rogers, C., Oakes, W., Faux, R., Lemons, G., Carberry, A., & McCormick M. (2010). The role of service-learning: Improving engineering education; Attracting women into engineering. Poster presented at the National Science Foundation Engineering Education Awardees Conference, Reston, VA.

## SUMMARY OF TEACHING ACTIVITIES

### COURSES TAUGHT AT ARIZONA STATE UNIVERSITY

EGR 673: Applications of Quantitative Methods for Engineering Education Research – Expected Instructor

Spring 2017 – 1 section (Co-Instructor: Jennifer Bekki); 5 students

EGR 574: Engineering Education Systems in Context – Instructor

Fall 2016 – 1 section (Co-Instructor: Jeremi London); 5 students

EGR 201: Use-Inspired Design Project I (formerly Fall Multidisciplinary Project) – Instructor

Course Coordinator (2014 – present)

Anticipated Fall 2017 – 2 sections (UGTA: Kylee Burgess)

Spring 2017 – 1 section; 46 students (UGTA: Kylee Burgess)

Fall 2016 – 1 section; 33 students

Spring 2016 – 1 section; 42 students

Fall 2015 – 2 sections; 76 students

Spring 2015 – 1 section; 30 students

Fall 2014 – 2 sections; 77 students (UGTA: Randi Taylor)

Fall 2013 – 2 sections; 80 students

Fall 2012 – 2 sections; 80 students (Co-Instructor: Odesma Dalrymple)

Fall 2011 – 2 sections; 65 students (Co-Instructor: Odesma Dalrymple)

EGR 202: Use-Inspired Design Project II (formerly Spring Multidisciplinary Project) – Instructor  
Course Coordinator (2014 & 2015)

Spring 2015 – 1 section; 33 students

Spring 2014 – 2 sections; 78 students

Spring 2013 – 1 section; 45 students

EGR 294 (currently EGR 218): Materials & Manufacturing Processes – Instructor

Spring 2013 – 1 section; 68 students

EGR 102: Foundations of Engineering Design Project II (formerly Introduction to Engineering Design II) – Instructor

Spring 2016 – 1 section; 44 students

Spring 2012 – 1 section; 23 students (Co-Instructor: Ashish Amresh)

EGR 224: Materials Selection – Instructor

Spring 2012 – 2 sections; 53 students

Spring 2011 – 1 section (Faculty Associate under Ann McKenna & Caitlyn Butler)

#### **COURSES TAUGHT AT TUFTS UNIVERSITY**

EN 10: Prototyping Home Robots/Simple Robotics – Instructor

Spring 2007 – 1 section (Co-Instructors: Morgan Hynes & Erin Cejka)

CHEM 01/02: Chemistry Fundamentals – Lab Instructor

Fall 2004 – 2 sections

Fall 2003 – 2 sections

Fall 2002 – 2 sections

CHEM 31: Physical Chemistry – Lab Instructor

Spring 2004 – 1 section

#### **ADVISING AT ARIZONA STATE UNIVERSITY**

Dissertation Chair

Eunsil Lee – Expected 2021, Ph.D. Engineering Education Systems & Design (Co-Chair: Jennifer Bekki)

Dissertation Committees

Medha Dalal – Expected 2020, Ph.D. Learning, Literacies & Technology (Chair: Leanna Archambault)

Carl Whitesel – “Relationships Among Personal Characteristics, Self-Efficacy, and Conceptual Knowledge of Circuit Analysis of Community College Engineering Students” – May, 2014, Ph.D. Curriculum & Instruction (concentration Engineering Education) (Chair: Dale Baker)

\* Current Position: Professor, Mesa Community College