

## MICHAEL J. PRINCE

**APPOINTMENTS**            Bucknell University, Department of Chemical Engineering  
Professor (2002-Present)  
Associate Professor (1995-2002)  
Assistant Professor (1989-1995)

**EDUCATION**            Ph. D. Chemical Engineering, May 1989  
University of California, Berkeley, CA

B. S. Chemical Engineering, with honors, May 1984  
Worcester Polytechnic Institute, Worcester, MA

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### Journal and Book Publications

Finelli, C., L Carroll, M Prince, M Graham, M Andrews, J Husman, M. Borrego, “A Professional Development Workshop to Promote the Adoption of Active Learning in STEM, submitted to Active Learning in Higher Education, (in review)

Andrews, M., M. Graham, M. Prince, M. Borrego, C. Finelli and J. Husman, “Student Resistance to Active Learning: Do Instructors (Mostly) Get It Wrong?”, Australian Journal of Engineering Education, (accepted for publication)

Brent, R., R. Felder and M. Prince, “Promoting and Managing Student-Student Interactions in Online STEM Classes”, International Journal of Engineering Education (accepted for publication) 2020.

Prince, M., R. Felder and R. Brent, “Active Student Engagement in Online STEM Classes: Approaches and Recommendations”, Advances in Engineering Education, Covid Edition, December, 2020

Lombardi, D., Shipley, T. F., Astronomy Team (Bailey, J. M, Bretones, P. S., Prather, E. E.), Biology Team (Ballen, C. J., Knight, J. K., Smith, M. K.), Chemistry Team (Stowe, R. L., Cooper, M. M.), Engineering Team (Prince, M.), Geography Team (Atit, K., Uttal, D. H.), Geoscience Team (LaDue, N. D., McNeal, P. M., Ryker, K., St. John, K., van der Hoeven Kraft, K. J.), & Physics Team (Docktor, J. L.) (in press). The curious construct of active learning. *Psychological Science in the Public Interest*.

- Prince, M., M. Koretsky, B. Self and M. Vigeant, “Augmenting the Classical Change Model to Promote Conceptual Learning in Core Engineering Courses”, *Chemical Engineering Education*, Vol 54, No. 1, Winter, 2020
- Nottis, K., M. Vigeant, A. Carney and M. Prince, “Using or Viewing a Demonstration of Inquiry-Based Computer Simulations: The Effectiveness of Both in Learning Difficult Concepts in Heat Transfer”, reprinted in *Chemical Engineering Education*, Vol 53, No. 4, Fall 2019
- Morales, J., and M. Prince “Promoting Change Through a Summer Immersion Faculty Development Program”, *International Journal of Engineering Education*, 35.3, 2019
- P. Shekhar, M. Prince, C. Finelli, M. DeMonbrun and C. Waters, “Integrating Quantitative and Qualitative Research Methods to Examine Student Resistance to Active Learning”, the *European Journal of Engineering Education*, DOI: [10.1080/03043797.2018.1438988](https://doi.org/10.1080/03043797.2018.1438988), 2018
- Tharayil, S., M. Borrego, M. Prince, K. Nguyen, P. Shekhar, C. Finelli, and C. Waters, “Strategies to Mitigate Student Resistance to Active Learning”, the *International Journal of STEM Education*, Vol 5, No. 7, 2018
- C. Finelli, K. Nguyen, M. DeMonbrun, M. Borrego, C. Henderson, M. Prince, P. Shekhar, C. Waters and J. Husman, “Reducing Student Resistance to Active learning: Strategies for Instructors”, *Journal of College Science Teaching*, 47(5), 80-91, May/June, 2018
- Prince, M., M. Vigeant, K. Nottis and G. Nottis, “Teaching Concepts Using Inquiry-Based Instruction: How Well Does Learning Stick?”, *International Journal of Engineering Education*, Vol. 34, No. 2(A), pp. 1–12, 2018
- Prince, M., and M. Weimer, “Student Resistance to Active Learning”, *Faculty Focus Premium*, Magna Publications, November 2, 2017
- Nottis, K., M. Prince and M. Vigeant, “Undergraduate Engineering Students’ Understanding of Heat Temperature and Energy: An Examination by Gender and Major”, *US-China Education Review, A*, 7(3), 125-143., 2017
- K. Nguyen, J. Hussman, P. Shekhar, M. Prince, C. Finelli, C. Henderson, M. DeMonbrun and C. Waters “Students’ Expectations, Types of Instruction, and Instructor Strategies Predicting Student Response to Active Learning”, *International Journal for Engineering Education*, Vol 33. No. 1, 2017
- M. Demonbrun, M. Borrego, C. Finelli, M. Prince, C. Henderson and C. Waters, “Creating an Instrument to Measure Student Response to Instructional Practices”, *Journal of Engineering Education*, Vol 106, Issue 2, April 2017
- Prince, M., M. Vigeant and K. Nottis, “The Impact of Inquiry-Based Learning Activities on the Retention and Transfer of Conceptual Learning in Heat Transfer”, *Chemical Engineering Education*, Vol. 49, No. 1, Winter 2015
- Shekhar, P., M. Demonbrun, M. Borrego, C. Finelli, M. Prince, C. Henderson and C. Waters, “Development of an Observation Protocol to Study Undergraduate Engineering Student Resistance to Active Learning”, *International Journal of Engineering Education* Vol. 31, No. 2, pp. 1–13, 2015
- Vigeant, M., M., Prince and K Nottis, “Repairing engineering students’ misconceptions about energy

and thermodynamics”, In “Teaching and learning of energy in K-12 education”, Springer, New York, 2014

Stefanou, C., S. Lord, S. M. Prince and J. Chen, "The Effect of Classroom Gender Composition on Students' Development of Self-Regulated Learning Competencies", *International Journal of Engineering Education* Vol. 30, No. 2, pp. 1–10, 2014

Felder, R., R. Brent and M. Prince, “Engineering Instructional Development: Programs, Best Practices, and Recommendations”, *Cambridge Handbook of Engineering Education Research*, Cambridge University Press, 2014. Winner of the AERA Division I Outstanding Publication Award for Books in 2014

Borrego, C. Henderson, S. Cutler, J. Froyd and M., Prince, “Influence of Engineering Instructors’ Teaching and Learning Beliefs on Pedagogies in Engineering Science Courses”, *International Journal of Engineering Education* Vol. 29, No. 6, 2013

Froyd, J., M. Borrego, S. Cutler, C. Henderson and M. Prince, “Estimates of Use of Research-Based Instructional Strategies in Core Electrical or Computer Engineering Courses”, *IEEE Transactions on Education*, 56(4), 2013.

Borrego, C. Henderson, S. Cutler, J. Froyd and M., Prince, Fidelity of Implementation of Research-Based Instructional Strategies (RBIS) in Engineering Science Courses, *Journal of Engineering Education*, Vol. 102, No. 3, July 2013.

Prince, M. Borrego, C. Henderson, S. Cutler and J. Froyd, “Use of Research-Based Instructional Strategies in Core Chemical Engineering Courses, *Chemical Engineering Education*, 47(1) page 27, Winter 2013; Winner of the William H. Corcoran Award for the best CEE paper of 2013).

Stefanou, C., Stolk, J., Prince, M., Chen, J., and Lord, S., “Self-regulation and autonomy in problem- and project-based learning environments,” *Active Learning in Higher Education*, Volume 14, Number 2, 2013.

S. M. Lord, M. J. Prince, C. R. Stefanou, J. D. Stolk, and J. C. Chen, “The Effect of Different Active Learning Environments on Student Outcomes Related to Lifelong Learning,” *International Journal of Engineering Education*, 28(3), 606-620 (2012).

Prince, M., M. Vigeant and K. Nottis, “Development of the Heat and Energy Concept Inventory”, *Journal of Engineering Education*, Vol. 101, No. 3, pp. 412-438, July, 2012.

Vigeant, M., M. Prince and K. Nottis, “Development of Concept Questions and Inquiry-Based Activities in Thermodynamics and Heat Transfer: An Example for Equilibrium vs. Steady-State”, *Chemical Engineering Education*, Vol. 45, No. 3, Summer, 2011 (Winner of the William H. Corcoran Award for the best CEE paper of 2011).

Komives, C., M. Prince and F. Fernandez, “Integration of Biological Applications into the Core Undergraduate Curriculum: A Paradigm Shift for Chemical Engineering Education”, *Chemical Engineering Education*, Vol. 45, No. 1, Winter 2011

Felder, R., R. Brent and M. Prince, “Engineering Instructional Development: Programs, Best Practices, and Recommendations”, *J. Engr. Education*, 100(1), 89-122, January 2011

Prince, M., M. Vigeant and K. Nottis, "Assessing Misconceptions of Undergraduate Engineering Students in the Thermal Sciences", International Journal of Engineering Education, Special Issue on the Application of Engineering Education Research, Vol. 26-4, August 2010

Nottis, K., M. Prince and M. Vigeant, "Building an Understanding of Heat Transfer Concepts in Undergraduate Chemical Engineering Courses", U.S.-China Education Review, Issue No. 2, 2010

Prince, M., M. Vigeant and K. Nottis, "Repairing Student Misconceptions in the Thermal Sciences", submitted to The Chemical Engineer, January 2010

Prince, M., M. Vigeant, and K. Nottis, "A Preliminary Study on the Effectiveness of Inquiry-Based Activities for Addressing Misconceptions of Undergraduate Engineering Students", Advances in Engineering Education, Volume 4, Issue 2, July 2009, Pages 29-41 (Winner of the Hutchison Medal for Best Education Paper of 2009)

Prince, M, R. Felder and R. Brent, "The Case for Inductive Teaching", PRISM, Fall 2007

Prince, M., R. Felder and R. Brent, "Does Faculty Research Improve Undergraduate Teaching: An Analysis of Existing and Potential Synergies", Journal of Engineering Education, October 2007

Prince, M., and R. Felder, "The Many Faces of Inductive Teaching and Learning", Journal of College Science Teaching, April 2007

Prince, M., and R. Felder, "Inductive Teaching and Learning Methods: Definitions, Comparisons, and Research Bases", Journal of Engineering Education, April 2006

Prince, Michael, "Does Active Learning Work? A Review of the Research", Journal of Engineering Education, Vol. 93, No. 3., July 2004

Prince, M., and A. Uppal, "The Effect of Temperature, Pressure and pH on Biogas Methane Content from a Two-Stage Immobilized Cell Bioreactor," Advances in Environmental Research, Vol. 2, (1) 1998.

Prince, M., "Summary Report on R&D for Methane Process," Ben Franklin Project Technical Report, September 1994

Csernica, J., and M. Prince, "Gas Permeation in Plasma Polymerized Vinyl Bromide," Polymer, Vol. 34, 1993

Prince, M., and Y. Sambasivam, "Bioremediation of Oil Refinery Wastes," Environmental Progress, February 1993

Prince, M., and H. Blanch, "Bubble Coalescence and Break-up in Air Sparged Biochemical Reactors," AIChE Journal, August 1990

Prince, M., and H. Blanch, "Transition Electrolyte Concentration for Bubble Coalescence," AIChE Journal, September 1990

Prince, M., J. Walters and H. Blanch, "Bubble Break-up in Air-Sparged Bioreactors," First Generation of Bioprocess Engineering, edited by T. K. Ghose, Ellis Horwood Limited, Chichester, England (1989)

#### **Conference Proceedings/Presentations:**

Vigeant, M., M. Prince, et al., “PBL, Active, and Laboratory Learning in a remote or blended classroom: Practical Hints for Course Conversion”, presented at the ASEE annual conference, Long Beach, CA, June, 2021.

Vigeant, M., R. Snyder and M. Prince, “Steal This Course: Chemical Engineering Design”, presented at the AIChE annual convention, San Francisco, CA, November, 2020

B. Self, M., Koretski, S. Nolan, M. Prince, C. Papadopoulos, J. Widmann, and D. Dal Bello, “Understanding Context: Propagation and Effectiveness of the Concept Warehouse in Mechanical Engineering at Five Diverse Institutions and Beyond – Results from Year 1”, presented at the annual ASEE conference, Montreal, Canada, June 20-24, 2020.

Finelli, C., Maura Borrego, Jenefer Husman, and Michael Prince, “Reducing Student Resistance to Active Learning: Applying Research Results to Faculty Development”, presented at the annual ASEE conference, Montreal, Canada, June 20-24, 2020.

Husman, J., M. Graham, M. Borrego, C. Finelli, M. Prince and R. Bermudez, “Reducing Student Resistance to Active Learning: Development and Validation of a Measure, presented at the annual AERA conference, San Francisco, April, 2020.

Self, B., M., Koretski, S. Nolan and M. Prince, Using the Concept Warehouse to Develop Concept Questions in Statics, ASME IMECE2019, Salt Lake City, Nov 14, 2019

Koretski, M., B. Self, S. Nolan and M. Prince, “A Framework for Developing Concept Questions for Active Learning in Large Classes”, presented at the AIChE Annual Meeting, Orlando, FL, November, 2019.

Finelli, C., Maura Borrego, Jenefer Husman, and Michael Prince, “Changing instructor behavior and promoting the use of strategies to reduce resistance to active learning”, presented at the Research in Engineering Education Symposium, Capetown South Africa, July 10-12, 2019.

Koretski, M., B. Self, S. Nolan, M. Prince, C. Papadopoulos, J. Widmann, and D. Dal Bello, “Systematic Development of ConcepTests for Active Learning, presented at EduLearn Conference, Palma de Mallorca, Spain, July 2-4, 2019

Nottis, K., M. Vigeant, A. Carney and M. Prince, “Using or Viewing a Demonstration of Inquiry-Based Computer Simulations: The Effectiveness of Both in Learning Difficult Concepts in Heat Transfer”, presented at ASEE annual meeting, Tampa, FL, June, 2019

Prince, M., M. Vigeant, A. Cheville, C. Kim, and J. Tranquillo, “Preliminary Efforts to Define, Assess and Improve Students' Ability to Make "Connections" as Part of Developing an Entrepreneurial Mindset”, presented at the Frontiers in Education Conference, San Jose, November, 2018.

Vigeant, M., M. Prince, K. Nottis and M. Koretski, “ Enthalpy, Entropy, Confused Students & Overworked Faculty-What We've Learned about Students' Misconceptions in Thermal Sciences & Faculty Adoption of Effective Practices”, presented at the National AIChE Conference, Pittsburgh, October, 2018

Gadoury, C., K. Nottis, M. Vigeant, A. Carney and M. Prince, “Computer Simulations versus Physical Experiments: A Comparison of Implementation Methods for Heat Transfer Inquiry-Based Activities by Gender” presented at the ASEE national conference, Salt Lake City, UT, June 2018.

Vigeant, M., A. Carney, C. Kim, K. Nottis and M. Prince, “Curious about student curiosity: Implications of pedagogical approach for students’ mindset”, presented at the ASEE national conference, Salt Lake City, UT, June 2018.

Vigeant, M., M. Prince, E. Jablonski, K. Nottis and A. Golightly, Course Design Vs. Student Experience: To What Extent Do We Agree on What Happens in Class?” presented at the A.I.Ch.E. Annual Meeting, Minneapolis, MN, November, 2017.

Nguyen, K., M. DeMonbrun, M. Borrego, P. Shekhar, C. Finelli, M. Prince, C. Henderson, C. Waters and J. Husman, “The Tensions Measuring Pedagogy and Cognitive Engagement”, presented at the Engineering Education Research Symposium, Bogata, Columbia, July, 2017

Nguyen, K., Borrego, M., P. Shekar, M. Prince, C. Finelli, C. Henderson, and C. Waters "The Variation of Nontraditional Teaching Methods Across 18 Undergraduate Engineering Classrooms", presented at the ASEE national conference, Columbus, OH, June, 2017.

Vigeant, M., M. Prince and K. Nottis, “Why Wouldn’t You Run This as a Demo?”, presented at the ASEE national conference, Columbus, OH, June, 2017.

Borrego, M., K. Nguyen, P. Shekar, M. Prince, C. Finelli, C. Henderson, and C. Waters , “Students’ Expectations, Types of Instruction, and Instructor Strategies Predicting Student Response to Active Learning”, presented at the A.E.R.A. national meeting, San Antonio, TX, April, 2017.

Nguyen, K., Shekhar, P., Husman, J., Borrego, M., Prince, M., Finelli, C., Waters, C., DeMonbrun, M., & Henderson, C., Implementation and Faculty Reflection of an Instrument to Measure Student Response to Instructional Practices, American Society of Engineering Education Zone II Conference San Juan, Puerto Rico, March, 2017.

Nottis, K., M. Prince, M. Vigeant, C. Kim & E. Jablonski, “Setting the State for Innovation: Keeping Undergraduates Motivated and Curious”, presented at the Hawaii International Conference on Education, Honolulu, HI, January, 2017.

Vigeant, M., M. Prince and K. Nottis, “Effective, Adaptable Materials for Teaching Heat Transfer Concepts”, presented at the Hawaii International Conference on Education, Honolulu, HI, January, 2017.

Raymond, T. R. Snyder, M. Vigeant, J. Csernica, J. Maneval and M. Prince, “A Required, Non-Credit Seminar Series for Chemical Engineering Professional Development”, presented at the A.I.Ch.E. Annual Meeting, San Francisco, November, 2016

M. Vigeant, M. Prince, K. Nottis, M. Koretsky and T. Ekstedt “Mini-Labs That Scale! Activities, Demos, and Simulations for Heat Transfer Concepts” presented at the A.I.Ch.E. Annual Meeting, San Francisco, November, 2016

Smeraldo, K., K. Nottis, M. Vigeant, E. Jablonski, C. Kim, N. Siegel and M. Prince, “Gender differences in curiosity and motivation in courses designed to foster the entrepreneurial mindset”, Sigma Chi Student Research Symposium, Bucknell University, July, 2016.

Vigeant, M., K. Nottis, M. Prince, Bent, N., Cincotta, R., and MacDougall, K., “Effect of Experiment Type on Student Learning Capabilities in a Heat Transfer Setting?” Sigma Chi Student Research Symposium, Bucknell University, July, 2016.

Morales, J. C., M. Prince, “Status of a Summer Faculty Immersion Program After Four Years in Development”, ASEE national conference, New Orleans, June, 2016.

Kim, C., K. Nottis, A. Cheville, M. Prince, M. Vigeant, J. Tranquillo & E. Jablonski, “Instilling an entrepreneurial mindset through IDEAS Studio courses”, ASEE national conference, New Orleans, June, 2016.

Nottis, K., M. Prince, M. Vigeant, C. Kim & E. Jablonski, “The Effect of Course Type on Engineering Undergraduates' Situational Motivation and Curiosity, ASEE national conference, New Orleans, June, 2016.

Borrego, M., K. Nguyen, P. Shekar, M. Prince, C. Finelli, C. Henderson, and C. Waters, “Comparison of Student Responses to a Student Resistance Survey in Traditional and Active Learning Undergraduate Engineering Courses”, ASEE national conference, New Orleans, June, 2016.

Prince, M., M. Vigeant, K. Nottis and M. Koretsky, “Design For Impact: Inquiry-based activities for important concepts in heat transfer that faculty will actually use”, ASEE national conference, New Orleans, June, 2016.

Vigeant, M., M. Prince, K. Nottis and M. Koretsky . Hands-on, Screens-on, and Brains-on Activities for important concepts in heat transfer”, ASEE national conference, New Orleans, June, 2016.

Nguyen, K., P. Shekhar, J. Husman, M. Borrego, M. Prince, C. Finelli, C. Waters, R. DeMonbrun and C. Henderson, “Students’ Expectations in Undergraduate Engineering Active Learning Courses”, Mid Years Engineering Education conference (MYEEC), , College Station, TX, March, 2016.

Vigeant, M., C. Kim, A. Cheville, E. Jablonski, K. Nottis, M. Prince and J. Tranquillo, “Work In Progress: Assessing situational curiosity and motivation in open-ended design electives”, Frontiers in Education, El Paso, TX, October, 2015.

Borrego, M., M. Prince, C. Nellis, C. Finelli, C. Henderson, and C. Waters “A Mixed Method Study to Understand Student Resistance to Active Learning” to Engineering Education Research Symposium, Ireland, July, 2015.

Prince, M., M. Vigeant and K. Nottis, “The Impact of Inquiry-Based Learning Activities on the Retention and Transfer of Conceptual Learning in Heat Transfer ”, submitted to Engineering Education Research Symposium, Dublin, Ireland, July, 2015.

Richey, M., K. O’Mahony, F. Zender and M. Prince, “Revert to Default: Problems with Transfer of Expertise in a Complex Competitive Workplace”, presented at the ASEE annual meeting, Seattle, WA, June 2015

Morales, J. C., M. Prince, “Third-Year Status of a Summer Faculty Immersion Program, presented at the ASEE annual meeting, Seattle, WA, June 2015

Morales, J. C., M. Prince , A Plan to Diffuse Hands-On Teaching and Learning in Puerto Rico, presented at the ASEE annual meeting, Seattle, WA, June 2015

Koretsky, M., M. Prince, M. Vigeant and K. Nottis, “Is Analogy an Effective Pedagogical Strategy for Inquiry-Based Learning?”, presented at the ASEE annual meeting, Seattle, WA, June 2015 (Best PIC I Paper Award for 2015)

Vigeant, M., M. Prince and K. Nottis, Design for Impact: Reimagining Inquiry-Based Activities in Heat Transfer for Effectiveness and Ease of Faculty Adoption, presented at the ASEE annual meeting, Seattle, WA, June 2015

Borrego, M., M. Prince, C. Nellis, C. Finelli, C. Henderson, and C. Waters , “A classroom observation instrument to assess student response to active learning”, presented at the FIE conference, Madrid, Spain, October, 2014

Widmann, J., B. Self and M. Prince, “Inquiry Based Learning Activities: Hands on Activities to Improve Conceptual Understanding”, presented at the FIE conference, Madrid, Spain, October, 2014

Borrego, M., M. Prince, C. Nellis, C. Finelli, C. Henderson, and C. Waters, “Student Perceptions of Instructional Change in Engineering Courses: A Pilot Study”, presented at the ASEE annual meeting, Indianapolis, IN, June 2014.

Morales, J. C., M. Prince, “Second-Year Enhancements to a Summer Faculty Immersion Program”, presented at the ASEE annual meeting, Indianapolis, IN, June 2014.

Vigeant, M., M. Prince and K. Nottis, "Development and Assessment of an Inquiry-Based Learning Activity in Dynamics: A Case Study in Identifying Sources and Repairing Student Misconceptions.", presented at the ASEE annual meeting, Indianapolis, IN, June 2014.

Vigeant, M., M. Prince and K. Nottis, "Design for Impact: Reimagining Inquiry-Based Activities for Effectiveness and Ease of Faculty", presented at the ASEE annual meeting, Indianapolis, IN, June 2014.

Nottis, K., Prince, M., & Vigeant, M., “Undergraduate Engineering Students’ Understanding of Heat, Temperature, and Energy: An Examination by Gender”, Paper presented at the 7<sup>th</sup> Symposium on Engineering and Liberal Education, Union College, Schenectady, NY, June, 2014.

Nottis, K., M. Vigeant and M. Prince, “Implementation of Inquiry-Based Activities in Undergraduate Engineering Courses, ”, presented at the Hawaii International Conference on Education, Honolulu, HI, January 2014.

Self, B., J. Widmann and M. Prince, “Effectiveness of Two Inquiry-Based Learning Activities in Dynamics”, presented at the Research in Engineering Education Symposium, Malaysia, July 4-6, 2013.

Morales, J. C., M. Prince, “Summer Faculty Immersion as a Strategy to Diffuse Engineering Education Innovations: First Year Results”, presented at the ASEE annual meeting, Atlanta, June 2013.

Nottis, K., M. Vigeant and M. Prince, “The Effect of Inquiry-Based Activities and Prior Knowledge on Undergraduates' Understanding of Reversibility”, presented at the ASEE annual meeting, Atlanta, June 2013.



Prince, M., M. Vigeant and K. Nottis, "Assessment and repair of critical misconceptions in engineering heat transfer and thermodynamics", presented at the ASEE annual meeting, Atlanta, June 2013.

Self, B. and M. Prince, "Inquiry-Based Learning Activities in Dynamics", presented at the ASEE annual meeting, Atlanta, June 2013.

Silva, A., K. Nottis, M. Vigeant and M. Prince, "The Effect of Inquiry-Based Activities on Undergraduate Students' Understanding of Reversibility in Chemical Engineering", presented the Kalman research Symposium, Bucknell University, April, 2013.

Prince, M., M. Vigeant, K. Nottis and R. Miller, "Assessment and Repair of Critical Misconceptions in Engineering Heat Transfer and Thermodynamics", presented at the NSF-TUES conference, Washington, D.C., January 24, 2013.

Raymond, T., M. Vigeant and M. Prince, "Development, Implementation, Observations and Abandonment of a Comprehensive Concept Inventory in Chemical Engineering", presented at the AIChE National Meeting, Pittsburgh, PA, October, 2012.

Prince, M., "Engineering Educational Research Inspired by Richard Felder", presented at the AIChE National Meeting, Pittsburgh, PA, October, 2012.

Aguilera Silva, A., K. Nottis, M. Vigeant and M. Prince, "The Effect of Inquiry-Based Activities on Undergraduate Students' Understanding of Reversibility in Chemical Engineering", presented the Northeastern Educational Research Association, October 2012.

Nottis, K., M. Prince, M. Vigeant, "Heat, Temperature, and Energy Concepts: Do Inquiry-Based Activities Make a Difference in Their Understanding?", presented the Northeastern Educational Research Association, October 2012.

Prince, M., M. Vigeant and K. Nottis, "The Use of Inquiry-Based Activities to Repair Student Misconceptions Related to Heat, Energy and Temperature", presented at the Frontiers in Education Conference, Seattle, WA, October, 2012

Cutler, S., M. Borrego, J. Froyd, M. Prince and C. Henderson, "A Comparison of Electrical, Computer, and Chemical Engineering Faculty's Progression through the Innovation-Decision Process", presented at the Frontiers in Education Conference, Seattle, WA, October, 2012

Aguilera Silva, A., K. Nottis, M. Vigeant and M. Prince, "The Effect of Inquiry-Based Activities on Undergraduate Students' Understanding of Reversibility in Chemical Engineering", presented at Geisinger Medical Center, Danville, PA, August 2, 2012.

Vigeant, M., M. Prince and K. Nottis, "Making their Brains Hurt: Quick and Effective Activities for Thermodynamics", presented at the ASEE annual meeting, San Antonio, June 2012.

Prince, M., M. Vigeant and K. Nottis, "Using Inquiry-Based Activities to Repair Student Misconceptions In Heat Transfer", plenary presentation, ASEE annual meeting, San Antonio, June 2012.

Cutler, S., M. Borrego, J. Froyd, M. Prince and C. Henderson, Collaborative Research: Use and Knowledge of Research-Based Instructional Strategies (RBIS) in Engineering Science Courses, presented at the NSF Awardees Conference, Virginia Tech University, March, 2012.

Cutler, S., M. Borrego, J. Froyd, C. Henderson and M. Prince, “Faculty Use of Research Based Instructional Strategies”, presented at the Australasian Association for Engineering Education, December 2011.

Lorson, A., K. Nottis, M. Prince, M. Vigeant and I. Smolleck, “The Effect of Prior knowledge and Grade Point Average on Undergraduates’ Understanding of Heat Transfer”, presented at the Northeastern Educational Research Association, Rocky Hill, CT, October 2011.

Nelson, S., Nottis, K., Vigeant, M., Prince, M., Miller, R., & Stefanou, C. (2011, October) “*The Effect of Gender and Inquiry-Based Activities on Understanding Concepts in Thermodynamics*”, paper presented at Northeastern Educational Research Association conference, Rocky Hill, CT.

Walter, J., Stefanou, C., Stolk, J., Lord, S., Prince, M., Chen, J., & Nottis, K. (2011, October) “*Gender Differences in Engineering Classrooms: Sugar and Spice and Everything Nice?*”, paper presented at Northeastern Educational Research Association conference, Rocky Hill, CT.

Stefanou, C., J. Stolk, M. Prince, S. Lord, J. Chen, J. Walter and K. Nottis, “Toward Lifelong Learning: Self-Regulation in Undergraduate Engineering Courses”, presented at the Research in Engineering Education Symposium, Madrid, Spain, October 4-7, 2011.

Prince, M., M. Vigeant and K. Nottis, “Using Inquiry-Based Activities to Repair Student Misconceptions Related to Heat, Energy and Temperature”, presented at the Research in Engineering Education Symposium, Madrid, Spain, October 4-7, 2011.

Prince, M., “Active and Cooperative Learning”, main plenary session, presented at the ASEE annual meeting, Vancouver, CA, June 2011.

Lord, S., Prince, M., Stolk, J., Chen, J., Stefanou, C., Nottis, K., Walter, J. “Student Self-Directed Learning Outcomes for Different Learning Environments”, presented at the ASEE annual meeting, VanCouver, CA, June 2011.

Komives, C., E. Fernandez and M. Prince, “Biology Across the Curriculum: Preparing Students for a Career in the Life Sciences”, Presented at the ASEE annual meeting, VanCouver, CA, June 2011.

Prince, M., M. Vigeant and K. Nottis, “Inquiry-Based Activities to Address Critical Concepts in Chemical Engineering”, presented at the ASEE annual meeting, VanCouver, CA, June 2011.

Koretsky, M., M. Prince. R. Miller, S. Krause, M. Vigeant, A. Minnerick and J. Falconer, “Educational Methods and Tools to Encourage Conceptual Learning”, presented at the ASEE annual meeting, VanCouver, CA, June 2011.

Prince, M., M. Vigeant, K. Nottis,” Inquiry-Based Activities to Repair Persistent Student Misconceptions of Critical Engineering Concepts”, NSF Poster Session, presented at the ASEE annual meeting, VanCouver, CA, June 2011.

Walter, J., C. Stefanou, J. Stolk, M. Prince, J. Chen, S. Lord and K. Nottis, “Role of Faculty in Supporting Lifelong Learning: An Investigation of Self-Directed Learning Environments in Engineering Undergraduate Classrooms”, presented as the National Science Foundation Awardees Conference, Reston, VA, March 2011.

Borrego, M., J. Froyd, C. Henderson and M. Prince, “Collaborative Research: Use and Knowledge of Research Based Instructional Strategies (RBIS) in Engineering Science Courses, presented as the National Science Foundation Awardees Conference, Reston, VA, March 2011.

Prince, M., “Diffusion of Innovations”, Panel Discussion, National Science Foundation special session, New Orleans, LA., February 6, 2011.

Vigeant, M., M. Prince and K. Nottis, “Engineering Undergraduates’ Conceptual Understanding of Thermodynamics: Assessment and Change after Typical Instruction”, presented at the Hawaii International Conference on Education, Honolulu, HI, January 2011.

Nottis, K., M. Vigeant and M. Prince, “The Effect of Participant and Professor Gender on Undergraduates’ Understanding of Thermodynamics”, presented at the Hawaii International Conference on Education, Honolulu, HI, January 2011.

Stolk, J., C. Stefanou, M. Prince, J. Chen, S. Lord, K. Nottis and J. Walter, “Does Your Classroom Support Student Autonomy”, presented at the Active Learning in Engineering Conference, Santiago Chile, January 2011.

Vigeant, M., M. Prince and K. Nottis, “Inquiry-Based Activities to Repair Persistent Student Misconceptions of Critical Engineering Concepts”, Course, Curriculum and Laboratory Improvement Principle Investigators Pre-Conference Poster Session”, Washington DC, January 2011

Vigeant, M., M. Prince and K. Nottis, “Inquiry-Based Activities to Repair Persistent Student Misconceptions of Critical Engineering Concepts”, Course, Curriculum and Laboratory Improvement Principle Investigators Conference, Washington DC, January 2011

Prince, M., “Active Learning”, presented at the Frontiers of Engineering Education conference sponsored by the National Academy of Engineering (invited speaker), Irvine, CA, December 2010

Vigeant, M., M. Prince and K. Nottis, "Steal This Course: Chemical Engineering Thermodynamics", presented at the AIChE annual meeting, Salt Lake City, Utah, November 2010.

Walter, J., C. Stefanou, J. Stolk, M. Prince, J. Chen, S. Lord and K. Nottis, “Gender Differences in Engineering Education: Is what’s Good for the Goose Good for the Gander?” Northeastern Educational Research Association, Rocky Hill, CT, October 2010.

Stolk, J., C. Stefanou, M. Prince, J. Chen, S. Lord, K. Nottis, and J. Walter,” Supporting Lifelong Learning in Problem- and Project-Based Undergraduate Engineering Courses”, presented as the ASEE Global Colloquium on Engineering Education, Singapore, China, October 2010.

Felder, R., R. Brent and M. Prince, “Instructional Development in Engineering: State of the Art and Future Directions”, presented as the ASEE Global Colloquium on Engineering Education, Singapore, China, October 2010.

Chen, J., S. Lord, K. Nottis, M. Prince, C. Stefanou, and J. Stolk, “Work in Progress – Role of Faculty in Promoting Lifelong Learning: Characterizing Classroom Environments”, Frontiers in Education Conference, Washington D.C., October 2010.

Prince, M., M. Vigeant and K. Nottis, “The Use of Inquiry-Based Activities to Address Student Misconceptions about Heat Transfer”, presented at the ASEE meeting, Louisville, KY, July 2010.

Vigeant, M., M. Prince and K. Nottis, “Entropy, Equilibrium and Enthalpy: Assessment and Repair of Critical Misconceptions in Thermodynamics”, presented at the ASEE meeting, Louisville, KY, July 2010.

Vigeant, M., M. Prince and K. Nottis, “Inquiry-Based Materials for Conceptual Learning in Heat Transfer and Thermodynamics”, presented at the ASEE meeting, Louisville, KY, July 2010.

Kraus, S., M. Prince, “Special Session: Innovative Pedagogies for Teaching Introductory Materials Courses”, presented at the ASEE meeting, Louisville, KY, July 2010

D. Schaefer, D. Visco, T.T. Utschig, J.P. Mohsen, N.L. Fortenberry, M. Prince, “SPEED – An ASEE Initiative for A Nationally Recognized Development Program for Engineering Educators”, presented at the ASEE meeting, Louisville, KY, July 2010.

Lord, Susan M.; Chen, John C.; Nottis, Katharyn; Prince, Michael; Stefanou, Candice; Stolk, Jonathan, “Role of Faculty in Promoting Lifelong Learning”, EDUCON, Madrid, Spain, April 2010

Steffanou, C., J. Stolke, S. Lord, J. Chen, K. Nottis and M. Prince, “Autonomy Support: Identifying the Essential Components and Motivational Benefits”, AERA April 2010

N.L. Fortenberry, J.P. Mohsen, M. Prince, D. Schaefer, T.T. Utschig, D. Visco, SPEED – “An ASEE Initiative for A Nationally Recognized Development Program for Engineering Educators”, ASEE Southeastern Section Annual Conference, Virginia Tech, VA, April 18-20, 2010

Mitchell, T., E. Fernandez, J. Chalmers, T. Good, M. Prince, L. Simon, J. O'Connell and C. Komives, “Novel Resource for Chemical Engineering Faculty and Undergraduate Students Interested in Biotechnology: Bioengineering Educational Materials Bank”, ACS National Meeting, San Francisco, CA, March 2010.

Chen, J., J. Stolk, S. Lord, C. Stefanou, K. Nottis and M. Prince, “The Role of Faculty in Promoting Self-Directed Learning”, NSF awardee conference Reston, Virginia, January 31-February 2, 2010

Nottis, K., M., Prince and M. Vigeant, “The Effect of Engineering Major and Gender on Undergraduate Engineering Students’ Understanding of Heat, Temperature, and Energy Concepts”, the Hawaii International Conference on Education, Honolulu, HI, January 2010.

Nottis, K., M., Prince, M. Vigeant, S. Nelson and K. Hartsock, “Undergraduate Engineering Students' Understanding of Heat, Temperature, and Radiation”, Northeastern Educational Research Association, Hartford, CT, October 2009.

Prince, M., “Does Faculty Research Improve their Teaching?” 2009 Patriot League Academic Conference at Bucknell University, October 30-31, 2009

Stolk, J.D., Prince, M., Lord, S.M., Chen, J., Nottis, K.E., and Stefanou, C., “Role of Faculty in Supporting Lifelong Learning”, Frontiers in Education, San Antonio, TX, October 2009.

Turns, J., Gyki, K. and Prince, M., “How Do Engineering Faculty Take Motivation Into Account”, Research in Engineering Education Symposium, Brisbane, AU, July 2009.

Prince, M., “An Overview of Problem-based Learning in Engineering”, invited discussion at the NSF-funded PBL Symposium in Loughborough, UK, July 2009.

Prince, M., M., Vigeant and K. Nottis, “Inquiry-Based Activities to Repair Misconceptions in Thermodynamics and Heat Transfer”, ASEE National Meeting, Austin, TX, June 2009.

Prince, M., M., Vigeant and K. Nottis, “Development of Concept Inventory in Heat Transfer”, ASEE National Meeting, Austin, TX, June 2009.

Stolk, J.D., Prince, M., Lord, S.M., Chen, J., Nottis, K.E., and Stefanou, C., “Role of Faculty in Supporting Lifelong Learning: An Investigation of Student Autonomy in Engineering Undergraduate Classrooms”, NSF EEC Awardees Conference 2009, Reston, VA, Feb. 2-3, 2009.

Nottis, K., M. Prince and M. Vigeant, “Development of an Instrument to Assess Crucial Concepts about Heat Transfer in Undergraduate Chemical Engineering Instruction”, submitted (August 2008) to the Hawaii International Conference on Education, Honolulu, HI, January 2009

Prince, M., “Does Faculty Research Improve Undergraduate Teaching”, Plenary Presentation in the Education Division at the Annual A.I.Ch.E. National Meeting, Philadelphia, PA, November 2008

Prince, M., “200 Years of Chemical Engineering Education: The Need for Scholarly Teaching and the Scholarship of Teaching and Learning”, Plenary Presentation in the Education Division at the Annual A.I.Ch.E. National Meeting, Philadelphia, PA, November 2008

Vigeant, M., M. Prince and G. MacInnes, “Simulations for Inquiry-Based Experimentation in Thermodynamics and Heat Transfer”, Annual AIChE National Meeting, Philadelphia, PA, November 2008

Margot Vigeant, James Maneval, William Snyder, Michael Hanyak and Michael Prince, “Senior Design as Project Engineering: Moving from Paper to Practice”, Annual A.I.Ch.E. National Meeting, Philadelphia, PA, November 2008

Vigeant, M., Raymond, T., Csernica, J., and M. Prince, “Development of a Chemical Engineering Comprehensive Concept Inventory”, Workshop presented at the Annual A.I.Ch.E. National Meeting, Philadelphia, PA, November 2008

Nottis, K., M. Prince and M. Vigeant, “Addressing Misconceptions about Heat Transfer in Undergraduate Chemical Engineering Instruction”, presented at the Annual Meeting of the Northeastern Educational Research Association, Rocky Hill, CT, October 2008

Prince, M., M. Vigeant, and K. Nottis, “Phase 1 Results of Using Inquiry-Based Activities to Address Student Misconceptions in Heat Transfer and Thermodynamics”, Course, Curriculum and Laboratory Improvement Conference, Sponsored by the Department of Undergraduate Education, Washington D.C., August 2008

Prince, M., M. Vigeant and K. Nottis, “Using Inquiry-Based Activities to Promote Understanding of Critical Engineering Concepts”, presented at the Research in Engineering Education Symposium, Davos, Switzerland, July 7-10, 2008

Vigeant, M., Prince, M., Raymond, T., “Creating a Comprehensive Concept Inventory for Chemical Engineering”, Workshop presented at ASEE national meeting, Pittsburgh, PA, June 2008

Vigeant, M., Maneval, J., Snyder, W., Hanyak, M., and Prince, M., "Hands-On Chemical Engineering Senior Design: The Evolution from Paper to Practice", presented at the ASEE national meeting, Pittsburgh, PA, June 2008

Prince, M. and M. Vigeant, "Using Inquiry-Based Methods to Address Critical Engineering Misconceptions", ASEE Conference, Honolulu, 2007

Prince, M., R. Felder and R. Brent, "Does Faculty Research Enhance Undergraduate Teaching: An Analysis of Existing and Potential Synergies", presented at the First International Conference on Research in Engineering Education, Honolulu, 2007.

Prince, M. and M. Vigeant, "Using Inquiry-Based Methods to Address Critical Engineering Misconceptions", A.I.Ch.E. National Conference, San Francisco, CA, November 2006.

Prince, M., and M. Vigeant, "Using Inquiry-Based Activities to Promote Understanding of Critical Engineering Concepts", ASEE Annual Conference and Exposition, June 2006, Chicago, IL

Brian Hoyt, Michael Prince, Steve Shooter, Michael Hanyak, , E.J. Mastascusa, William Snyder, T. Michael Toole, Mathew Higgins, Daniel C. Hyde, Marie Wagner, Margot Vigeant, "Engineering Education: A Conceptual Framework for Supporting Faculty in Adopting Collaborative Learning", ASEE Annual Conference and Exposition, June 22-25, 2003, Nashville, TN

Prince, M., and Brian Hoyt, "Helping Students Make the Transition from Novice to Expert Problem Solvers" 32<sup>nd</sup> ASEE/IEEE Frontiers in Education Conference, November 6-9, 2002, Boston, MA

Prince, M., Daniel C. Hyde, E.J. Mastascusa, Margot Vigeant, Michael Hanyak, Maurice F. Aburdene, Brian Hoyt and William Snyder, "A Conceptual Framework for Progressively Developing Students' Team and Problem-Solving Skills Across the Curriculum", ASEE Annual Conference and Exposition, June 16-19, 2002, Montreal, Canada

Prince, M., "Teaching Problem Solving Across the Engineering Curriculum", presented at the Northeastern Educational Research Association 32<sup>nd</sup> Annual Conference, Kerhonkston, NY, October 24, 2001.

Hoyt, B., M. Hanyak, M. Vigeant, W. Snyder, M. Aburdene, D. Hyde, E. Mastascusa and M. Prince, "Project Catalyst: Introducing Systemic Change in Engineering Education", 31<sup>st</sup> ASEE/IEEE Frontiers in Education Conference, Reno, NV, October 10-13, 2001.

Prince, M., M. Aburdene, B. Hoyt, D. Hyde, E. J. Mastascusa, L. Pease, W. Snyder and M. Vigeant, "Project Catalyst: Successes and Frustrations of Introducing Systemic Change to Engineering Education", presented at the ASEE national meeting, Albuquerque, NM 2001.

Chiboroski, P., B. Iwanowski, J. Michalek and M. Prince, "Mixing Quality Trends for a Continuous Industrial Mixer", presented at the AIChE meeting, Los Angeles, CA, November 2000.

Prince, M., Evans, J., and J. Maneval, "An Analysis of Boundary Conditions for Contaminant Transport through Adsorptive, Low-Permeability Slurry Trench Cutoff Walls", GeoDenver 2000: Proceedings of the ASCE Geo-Institute Specialty Conference on Geotechnical and GeoEnvironmental Engineering, Denver, CO., Aug 5-8, 2000.

Prince, M., "Starting a Grassroots Teaching Workshop", presented at Frontiers in Education, San Juan, Puerto Rico, Nov. 1999.

Prince, M., and J. Evans, "The Use of Adsorptive Additives to Improve the Performance of Slurry-Trench Cut-Off Walls", Proceedings of the 30th Mid-Atlantic Industrial and Hazardous Waste Conference, Villanova, PA, April 1998.

Evans, J., and M. Prince, "Low Permeability Vertical Barriers Enhanced for Combined Isolation and Treatment," Proceedings of the 4th International Symposium on Environmental GeoTechnology and Global Sustainable Development, Boston, MA, August 1998.

Evans, J., and M. Prince, "Enhanced Vertical Barriers for Combined Isolation and Treatment," presented at the ConSoil '98 Conference on Contaminated Soil, Edinburgh, Scotland, May 17-21, 1998.

Vasbinder, E., and M. Prince, "Analysis of a High-Speed Turbine Continuous Mixer", A.I.Ch.E. National Meeting, Miami, FL, Nov. 1998.

Prince, M., "The Use of Interactive Learning and Real World Problems to Teach Thermodynamics," National ACS meeting, San Francisco, April 1997.

Evans, J. and M. Prince, "Additive Effectiveness in Minerally-Enhanced Slurry Walls," Proceedings of the ASCE National Conference on In Situ Remediation of the Geoenvironment, October 1997.

Evans, J., T. Adams and M. Prince, "Metals Attenuation in Minerally-Enhanced Slurry Walls," Proceedings of the 1997 International Containment Technology Conference, St. Petersburg, FL, February 1997.

Evans, J., M. Prince, M. Bernardo and M. Faulkner, "Biologically Active Slurry Trench Cut Off Walls," Hazardous and Industrial Wastes: Proceedings of the Twenty-Sixth Mid-Atlantic Industrial Waste Conference, University of Delaware, August 1994.

Prince, M., and A. Uppal, "Methane Production from a Two-Stage Immobilized Microbial Reactor," AIChE national meeting, St. Louis, November 1993.

Session Chairman, Poster Session in Biotechnology and Food Science, AIChE national meeting, Miami Beach, FL, November 1992.

Prince, M., Z. Abdi, and V. Sagare, "The Effect of Surfactants on the Biological Degradation of Polycyclic Aromatic Hydrocarbons," AIChE national meeting, Miami Beach, FL, November 1992

Prince, M., and S. Sambasivam, "Bioremediation of Petrochemical Sludge from Oil Refining Operations," ACS national meeting, Pittsburgh, PA, August 1991.

Prince, M., and H. Blanch, "Bubble Coalescence and Break-up in Air-Sparged Biochemical Reactors," ACS National Meeting, Washington D.C., August 1990.

## **Research Proposals**

Morales, J., and M. Prince, "An Exploration of the Diffusion Mechanism in a Successful Faculty Development Program", submitted to the Spencer Foundation, \$50,000 requested (not funded)

Self, B., M. Koretski and M. Prince, “Collaborative Research: Understanding Context: Propagation and Effectiveness of the Concept Warehouse at in Mechanical Engineering at Five Institutions and Beyond”, submitted to the NSF IUSE program, December 12, 2017; \$2,000,000 requested (funded).

Finelli, C., M. Borrego, C. Waters and M. Prince, “Collaborative Research: Reducing Student Resistance to Active Learning: Applying Research Results to Faculty Development, submitted to the NSF WIDER program, December 12, 2017; \$1,850,000 requested (funded)

Vigeant, M., M. Prince and A. Golightly, “Research on factors impacting nontraditional faculty’s adoption of evidence-based teaching practices”, submitted to the NSF RFE program, September, 2017, \$204,000 requested (not funded).

Prince, M., M. Vigeant, A. Golightly and M. Koretski, “Impact for new audiences: Helping nontraditional faculty cultivate formation of student expertise in core engineering concepts”, submitted to the NSF RFE program, January, 2017, \$500,000 requested (not funded).

Self, B., M. Koretski and M. Prince, “Collaborative Research: Lowering the Barrier: Using the Concept Warehouse to expand evidence-based instruction throughout mechanical engineering”, submitted to the NSF IUSE program, January, 13, 2017; \$2,000,000 requested (not funded)

Kim, C., M. Vigeant, M. Prince, J. Tranquillo, A. Cheville, E. Jablonski and K. Nottis Curiosity and Connection - Phase 2 of Refining and Defining Assessment in IDEAS Design Electives and EML, KEEN Topical Grant Proposal, submitted to the KEEN Foundation, June 30, 2017; \$40,000 requested (funded)

Kim, C., M. Vigeant, M. Prince, J. Tranquillo, A. Cheville, E. Jablonski and K. Nottis, “Curiosity and Connection - Refining and Defining Assessment in IDEAS Design Electives and EML”, KEEN Topical Grant Proposal, submitted to the KEEN Foundation, March 7, 2016; \$40,000 requested (funded).

Self, B., M. Koretski and M. Prince, “Collaborative Research: Lowering the Barrier: Using the Concept Warehouse to expand evidence-based instruction throughout engineering”, submitted to the NSF IUSE program, January, 13, 2016; \$3,000,000 requested (not funded).

Self, B., M. Koretski and M. Prince, “ Collaborative Research: Propagating the Concept Warehouse to 50,000 Students Through Extension to Mechanical Engineering and Expansion of Research-Based Instructional Tools”, submitted to the NSF IUSE program, January, 13, 2015; \$2,000,000 requested (not funded).

Kim, C., Vigeant, M, Prince, M., Tranquillo, J. and A. Cheville, Topical Proposal Submittal - Assessing Situational Curiosity and Motivation in IDEAS Design Electives, submitted to the KEEN Foundation, August, 2014; \$41,200 requested (funded).

Finelli, C., M. Borrego, C. Henderson, C. Waters and M. Prince, “Understanding and Reducing student Resistance as a Barrier to Faculty Change, submitted to the NSF WIDER program, July 3, 2013; \$600,000 requested (funded).

Stolk, J., M. Prince, C. Stefanou, S. Lord, J. Chen, “Collaborative Research: Examining Engineering Students' Development as Lifelong Learners”, submitted to the NSF TUES program, January 13, 2012; \$600,000 requested (not funded).

Prince, M., M. Vigeant, K. Nottis and M. Koretski, “Design for Impact: Designing Effective Student Activities that Faculty Will Use”, submitted to the NSF TUES program January 13, 2012. \$600,000 requested (funded)



Stolk, J., M. Prince, C. Stefanou, S. Lord, J. Chen, J. Adler and J. Salisbury, “Collaborative Research: Examining Engineering Students' Development as Adaptive, Self-Regulated, and Lifelong Learners”, submitted to the NSF REESE program, November 15, 2011; \$1,500,000 requested (not funded).

Prince, M., M. Vigeant and K. Nottis, “Design for Impact: Designing Effective Student Activities that Faculty Will Use”, submitted to the NSF REE program September, 2011. \$299,095 requested (not funded)

Brignac, J., (M. Prince-consultant) “Summer Faculty Immersion Program (SFIP)”, Universidad del Turabo, submitted to US Department of Education - Title V for Hispanic Serving Institutions, April 29, 2011; (funded)

Self, B., C. Victorino, Widmann and M. Prince (consultant), “Using Inquiry-Based Activities to Repair Student Misconceptions in Engineering Dynamics”, NSF-TUES program, submitted June, 2010, \$200,000 requested (funded).

Borego, M., J. Froyd, M. Prince and C. Henderson, “Collaborative Research: Use and Knowledge of Research-Based Instructional Strategies (RBIS) in Engineering Science Courses”, NSF Engineering Education Division, submitted March, 2010, \$150,000 requested (funded)

Utshig, T., D. Visco, N. Fortenberry, C. Finelli, D. Schaeffer and M. Prince, Collaborative Research: ASEE SPEED program, NSF CCLI program. \$600,000 requested, January 13, 2010, (not funded)

Fortenberry, N. (M. Prince-Consultant), “Learning to Teach Learning: L2TL”, submitted to the NSF CCLI program, \$600,000 requested, January 13, 2010, (not funded)

Strobel, J., H. Woei, J. Lee and M. Prince, “Development and Testing of Assessment Instruments for Problem Conceptualization in Engineering Education – High School to Undergraduate Education”, REESE program of the NSF, ~\$1,500,000 requested November 2009, (not funded)

Chakra, D., (M. Prince-Consultant) “CAREER: Exploring the Relationship between Self-Efficacy and Project-Based Learning among Engineering Students”, \$400,000 requested April 2009, (funded).

Rhoads, T., Imbrie, P.K. and Froyd, J., (Prince –Consultant) “Addressing Conceptual Understanding of Engineering Students”, submitted to the NSF CCLI program, \$2,000,000 requested January 2009. (funded)

Fortenberry, N., Prince, M., Streveler, R., and Rogers, G., “Collaborative Proposal: Stimulating Change through Overviews of Learning, Assessment, and Research (SCHOLAR) Workshops”, submitted to the NSF CCLI program Jan. 2009, \$2,000,000 requested (not funded)

Prince, M., Steffanou, C., Nottis, K., Stolk, J., Lord, S., and J. Chen, “Collaborative Proposal: Role of Faculty in Supporting Lifelong Learning: An Investigation of Self-Directed Learning Environments in Engineering Undergraduate Classrooms”, submitted to NSF Innovations in Engineering Education, Curriculum and Infrastructure (IEECI), submitted April 2008. \$499,485 (\$258,793 for Bucknell) (funded)

Atman, C., J. Turns, D. Chachra and M. Prince, “Capacity Building in Engineering Education”, NSF Research Opportunity Award in Collaboration with the Center for the Advancement of Engineering Education, Submitted April 2008. \$120,000 total (\$28,000 for Bucknell) (funded)

Komives, C., L. Simon, E. Fernandez, and M. Prince, "Collaborative Research: CCLI: Educational Materials to Enhance Chemical Engineering Curricula with Applications in Biological Engineering", Submitted January 2008. \$500,000 (\$35,000 for Bucknell) (funded)

"Using Inquiry-Based Activities to Repair Persistent Student Misconceptions of Critical Engineering Concepts", submitted to the CCLI program of NSF Jan 2007. \$499,987 requested. Status: Funded

"Bridging the Gap between Educational Theory and Practice", submitted to the CCLI program of NSF, Jan 2006, \$499,170 requested. Status: Not Funded.

"Using Inquiry-Based Activities to Promote Understanding of Critical Engineering Concepts", submitted to the CCLI program of NSF, June 2004, \$74,703 requested. Status: Funded

"How to Engineer Engineering Education: Bridging the Gap Between Educational Theory and Practice", submitted to the CCLI program of NSF, June 2004, \$1,639,093 requested. Status: Not Funded

"Engineering Curriculum Revision via an Integrated Manufacturing Process Laboratory", submitted to the CCLI program of NSF, June 2003, \$74,761 requested. Status: Not Funded

"Combining Faculty Teamwork, Applied Learning Theory, and Information Technology: A Catalyst for Systemic Engineering Education Reform: Request for Supplemental Funding", submitted to NSF, January 2003, \$59,805 requested. Status: Funded

"Fostering Collaborative and Problem Based Learning through a Product Manufacturing Laboratory", submitted to the NSF CCLI, June 2002, \$177,270 requested. Status: Not Funded

"Fostering Collaborative and Problem Based Learning through a Product Manufacturing Laboratory", CCLI, June 2001, \$148,068 requested, Status: Not Funded

"Specific Product Manufacture: An Approach to Authentic Engineering Education", submitted to the NSF CCLI program, May 2000. \$232,452 requested. Status: Not Funded.

"The GE Project to Promote Excellence in Student Learning", submitted to the GE Foundation, August 2,000. \$300,000 requested: Status: Not Funded

"A Catalyst for Systemic Engineering Education Reform", submitted to FIPSE, February 2000. \$439,380 requested. Status: Not funded

"Specific Product Manufacture: An Approach to Authentic Engineering Education", submitted to the NSF Action Agenda Program, January 2000. \$272,000 requested. Status: Not funded.

"An Innovative Collaborative Learning Environment", submitted to Air Products and Chemicals, August 1999. \$225,000 requested. Status: Funded

"Evaluating the Potential for Contaminant Release from Recycled Materials in Highway Foundation Layers", submitted to the University of New Hampshire, August 1999. \$24,925 requested: Status: Not Funded.

"Continuous Mixer Testing", submitted to Ben Franklin Technology Center, April 1999. \$106,000 Requested; Status: \$106,000 Funded.

“Combining Faculty Teamwork, Applied Learning Theory and Information Technology: A Catalyst for Systemic Engineering Education Reform”, submitted to NSF, November 1998. \$898,455 Requested; Status: \$600,000 Funded.

“BioWaste Management”, submitted to Ben Franklin Technology Center, April 1998; \$85,000 requested; Status: Not Funded.

“Design of Biomedical Reactors for Improved Mixing of Shear-sensitive Materials at Low Reynolds Number”, submitted to the Fulbright Joint US Spain Science and Technology Program, December 1998. \$29,700 Requested; Status: Not Funded.

“Bridging the Collaborative Learning Gap: A Longitudinal Integration Scheme for the Middle Years of the Undergraduate Engineering Experience”, submitted to NSF, November 1998. \$167,000 Requested. Status: Not Funded.

"Faculty Teamwork, Applied Learning Theory and Information Technology: A Plan for Systemic Engineering Education Reform", submitted to NSF, April 1998, \$1,768,083 Requested; Status: Not Funded.

"Continuous Solids/Liquids Mixer Prototype Development," submitted to Ben Franklin Technology Center, April 1998; \$100,000 Requested; Status: Funded.

"Continuous Solids/Liquids Mixer Prototype Development," submitted to Ben Franklin Technology Center, September 1997; \$116,687 Requested; Status: Funded.

"Novel Additives for Enhanced Environmental Barriers," submitted to the ACS Petroleum Research Fund, August 1997; \$30,000 Requested; Status: Funded.

"Enhancement of Barrier Walls," submitted to the Department of Energy, April 1997; \$319,000 Requested; Status: Not Funded.

"Enhancement of Barrier Materials," submitted to the National Science Foundation, March 1997; \$319,000 Requested; Status: Not Funded.

Bucknell Curricular and Instructional Development Grant, Summer 1996; \$3,000 Requested; Status: Funded.

Bucknell Scholarly Development Grant, Summer 1995; \$3,000 Requested; Status: Funded.

"Biological Methane Production," submitted to the NET Ben Franklin Technology Center, June 1994; \$5,400 Requested; Status: Funded.

"Biological Methane Production," submitted to the NET Ben Franklin Technology Center, April 1993; \$53,000 Requested; Status: Funded.

"Biological Methane Production," submitted to the NET Ben Franklin Technology Center, April 1992; \$43,000 Requested; Status: Funded.

“Closed Aquaculture Systems,” submitted to the Ben Franklin Technology Center of Northern Pennsylvania, August 1991; \$99,000 Requested; Status: Not Funded.

"Surface Modification to Polypropylene", submitted to the Ben Franklin Technology Center of Northern Pennsylvania, August 1991; \$24,000 Requested; Status: Funded.

"Bioremediation of Hazardous Wastes," submitted to U.S. Department of Energy, January 1991; \$48,000 Requested; Status: Not Funded.

"Microbics Small Equipment Grant", submitted to Microbics Corporation, October 1990; \$10,000 Requested; Status: Funded.

"Bioremediation of Petrochemical Sludges", submitted to Sun Company, Inc., December 1990; \$24,000 Requested; Status: Not Funded.

"Surface Modification to Polypropylene", submitted to the Ben Franklin Technology Center of Northern Pennsylvania, April 1990; \$70,000 Requested; Status: Funded.

### **Faculty Development Workshops and Invited Talks**

Basic Instructional Design for Engineers (the online version), virtual workshop for U.Vm. faculty, January 26-27, 2021

National Effective Teaching Institute Online, January 6-7, 2021.

National Effective Teaching Institute Online, January 4-5, 2021.

Problem-Based Learning, Online workshop prepared for faculty at King Fahd University of Petroleum and Minerals, Dec 14-16, 2020

Teaching Backwards: An Introduction to Inquiry-Based Instruction, Online workshop prepared for faculty at King Fahd University of Petroleum and Minerals, November 17, 2020.

Active Learning for Busty Skeptics (The Online Version), virtual workshop for NYU faculty, October 20, 2020

National Effective Teaching Institute Online, September 8-9, 2020

National Effective Teaching Institute Online, August 10-11, 2020

National Effective Teaching Institute Online, July 30-31, 2020

Actively Engaging Students in Online Mechanical Engineering and Mechanics Courses, July 29, 2020

National Effective Teaching Institute Online, July 23-24, 2020

How to Engineer Engineering Education, Bucknell (virtual), July 15-16, 2020

"Technology Enhanced Active Learning - for Busy Skeptics and True Believers", ASEE National Conference, Montreal, CA, June 21, 2020.

National Effective Teaching Institute Online, June 20, 2020

National Effective Teaching Institute Online beta, June 11-12, 2020

National Effective Teaching Institute Online alpha, June 4-5, 2020

Practical Instructional Design for Engineers, Universidad del Turabo, Puerto Rico (virtual), June 1-3, 2020

“Active, Inductive and Problem-Based Learning for STEM Faculty”, presented at SMU, Dallas, TX, April 2-3, 2020.

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Seattle, WA, March 9-10, 2020

“National Effective Teaching Institute”, San Diego, CA, Jan 3-5, 2020

“Instructional Design for STEM Faculty”, UW Platteville, August 20-21, 2019

“National Effective Teaching Institute”, Philadelphia, PA, July 29-31, 2019

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 17-19, 2019

“Practical Instructional Design for Engineers”, presented at The Boeing Company, June 27-28, 2019

“Advanced National Effective Teaching Institute”, Tampa, FL, June 13-14, 2019

“Practical Instructional Design”, Universidad del Turabo, Puerto Rico, June 5-7, 2019

“Reducing Student Resistance to Active Learning”, presented at UT Austin, May 29-30, 2019

“Active, Inductive and Problem-Based Learning for STEM Faculty”, École Polytechnique de l'Université de Tours, May 14-15, 2019

“Reducing Student Resistance to Active Learning”, Penn State University, April 30, 2019

“Active Learning for Busy Skeptics and True Believers”, UC Berkeley, April 15, 2019

“National Effective Teaching Institute”, San Diego, CA, January 2-4, 2019

“Introduction to Problem-Based Learning”, Seattle University, Seattle, WA, December 13, 2018

“Active and Inductive Teaching and Learning”, Maharishi University of Management, Fairfield, Iowa, August 8, 2018

“National Effective Teaching Institute”, Philadelphia, PA, August 1-3, 2018

“Practical Instructional Design for Engineers” and “Problem-Based Learning”, Syracuse University, July 24-26, 2018

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 11-13, 2018

“Advanced National Effective Teaching Institute”, Salt Lake City, UT, June 28-29, 2018

“Practical Instructional Design”, Universidad del Turabo, Puerto Rico, June 13-15, 2018

“Cooperative and Problem-Based Learning”, University of Pittsburgh, June 6-7, 2018

“Practical Instructional Design for Engineers”, presented at The Boeing Company, May 31-June 1, 2018

“Active Learning for Busy Skeptics and True Believers”, Ecole Polytechnique, Montreal, May 24, 2018

“Practical Instructional Design for Engineers”, presented at Rochester Institute of Technology, May 14-16, 2018

“Problem-Based Learning” and “Assessment”, presented at Miami-Dade University, Miami, FL, May 7-8, 2018.

“Active Learning for Busy Skeptics and True Believers”, Stevens Institute of Technology, April 18, 2018

Keynote address at IUPUI, April 6, 2018

“Practical Instructional Design for Engineers”, presented at The Boeing Company, March 15-16, 2018

“Assessment: Beyond Grades”, Bloomsburg University, March 6, 2018

“Introduction to Problem-Based Learning”, Miami-Dade College, Miami, FL, Jan 26, 2018

“Practical Instructional Design for Engineers”, presented at Universidad Icesi, Cali, Colombia, Jan 9-10, 2018

National Effective Teaching Institute, San Diego, CA, Jan 2-4, 2018

“Practical Instructional Design for Engineers”, presented at The Boeing Company, December 11-12, 2017

“Introduction to Problem-Based Learning”, University of Dayton, Dayton, Ohio, November 7, 2017.

“Instructional Design for STEM faculty”, Morgan State University, Baltimore, August 15-16, 2017

“Practical Instructional Design for Engineers”, presented at The Boeing Company, August 4-5, 2017

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 19-21, 2017

National Effective Teaching Institute (advanced), Columbus, OH, June 23-24, 2017

“Instructional Design for STEM faculty”, Universidad del Turabo, Puerto Rico, June 14-16, 2017

IDEA Center Podcast, “Active Learning vs. the Lecture”, June, 2017

Plenary Speaker, “Teaching Professor Conference”, St. Louis, MO, June 2, 2017

“Active Learning for Busy Skeptics”, Associated Talent Development Conference, Atlanta, GA, May 24, 2017

National Effective Teaching Institute, Philadelphia, PA, May 21-23, 2017

“Problem-Based Learning”, Baylor University, Waco Texas, May 12, 2017

Johansen-Crosby Lecture in Chemical Engineering at Michigan State University, East Lansing, MI, April 20, 2017

“Instructional Design for Engineers”, Florida State University, Tallahassee, FL, April 6-7, 2017

“Active Learning”, presented at Bloomsburg University, Bloomsburg, PA, March 22, 2017

“Active Learning for Busy Skeptics and True Believers”, presented at the ASEE Zone II Conference, San Juan, Puerto Rico, March 1, 2017

“An Introduction to Active Learning”, podcast recorded for the IDEA center, February 9, 2017

“Active learning for advanced practitioners”, presented at Cornell University, January 17, 2017

“National Effective Teaching Institute”, presented in San Diego, CA Jan 7-9, 2017

“Practical Instructional Design for Engineers”, presented at The Boeing Company, December 17-18, 2016

“Active Learning for Busy Skeptics – and True Believers”, presented at Baylor University, Waco Texas, December 8, 2016

“Active Learning for Busy Skeptics – and True Believers”, presented at Indiana University Purdue University Fort Wayne, August 18, 2016

“Practical Instructional Design for Engineers”, presented at The Boeing Company, August 9-10, 2016

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 23-25, 2016

“Practical Instructional Design for Engineers”, presented at the University of Pittsburgh, July 11-12, 2016

“National Effective Teaching Institute”, presented in New Orleans, LA, June 23-25, 2016

“Introduction to Instructional Design”, Universidad del Turabo, Puerto Rico, June 14-5, 2016

“Active Learning for Busy Skeptics – and True Believers”, presented at the Teaching Professor Conference, Washington, D.C., June 4, 2016

“Advanced National Effective Teaching Institute”, presented in Washington, D.C., June 1-2, 2016

“Practical Instructional Design for Engineers”, presented at the Picatinny Arsenal, May 17-19, 2016

“Practical Instructional Design for Engineers”, presented at The Boeing Company, March 16-17, 2016

“Practical Instructional Design for Engineers”, presented at The Boeing Company, March 14-15, 2016

“Introduction to Instructional Design”, Universidad del Turabo, Puerto Rico, February 24-26, 2016

“National Effective Teaching Institute”, presented in San Diego, CA, January 6-8, 2016

“Practical Instructional Design for Engineers”, presented at The Boeing Company, August Dec 13-4, 2015

“Practical Instructional Design for Engineers”, presented at The Boeing Company, August 6-7, 2015

National Effective Teaching Institute, presented in Montreal, Canada, July 29-13, 2015

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 22-24, 2015

National Effective Teaching Institute, presented in Seattle, WA, June 11-13, 2015

“Active Learning for Busy Skeptics”, Next Step Faculty Institute, Amherst, MA, June 2, 2015

“Practical Instructional Design for Engineers”, presented at the Picatinny Arsenal, May 12-13, 2015

“Practical Instructional Design for Engineers”, presented at The Boeing Company, May 1-2, 2015

“Practical Instructional Design for Engineers”, presented at The Boeing Company, March 11-12, 2015

“Practical Instructional Design for Engineers”, presented at The Boeing Company, March 9-10, 2015

“Introduction to Instructional Design”, Universidad del Turabo, Puerto Rico, Mar 2-3, 2015

“Active Learning for Busy Skeptics”, presented at the University of Florida, Jan 26, 2015

National Effective Teaching Institute, presented in Austin, TX, Jan 3-5, 2015

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Dec 11-12, 2014

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Dec 9-10, 2014

“Inquiry-Based Activities to Repair Student Misconceptions”, presented at DiZ - Zentrum für Hochschuldidaktik, Ingolstadt, Germany, October 15-16, 2014

“Active Learning for Busy Skeptics”, Montana State University, Boseman, MT, Aug 22, 2014

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Aug 20-21, 2014

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Aug 18-19, 2014



“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 23-25, 2014

“National Effective Teaching Institute - 2”, presented in Montreal, Canada, July 14-15, 2014

“Practical Instructional Design for Engineers”, presented at Syracuse University, Syracuse, NY, June 25-27, 2014

“Practical Instructional Design for Engineers”, presented to visiting faculty from King Fahd University of Petroleum and Minerals (KFUPM) at Purdue University, IN, June 12-14, 2014

“National Effective Teaching Institute”, Washington D.C., May 30-June 1, 2014

“Making the Transition to Active Learning”, presented at LSU, Baton Rouge, LA, May 23-24, 2014

“Active and Inductive Learning, presented at Georgia Tech, Atlanta, GA, May 21, 2014

“Active and Inductive Learning”, presented at McGill University, Montreal, Canada, May 12, 2014

“Practical Instructional Design for Engineers”, presented at The Boeing Company, May 5-6, 2014

“Practical Instructional Design for Engineers”, presented at the Picatinny Arsenal, April 29-30, 2014

“Active Learning for Busy Skeptics”, presented at Stanford University, April 24, 2014

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Mar 24-25, 2014

“Making the Transition to Active Learning”, presented at Universidad del Turabo, Puerto Rico, Mar 2-3, 2014

“National Effective Teaching Institute”, New Orleans, LA, Jan 4-6, 2014

“Practical Instructional Design for Engineers”, presented at the Picatinny Arsenal, Dec 17-18, 2013

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Dec 11-12, 2013

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Aug 1-2, 2013

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 25-27, 2013

National Effective Teaching Institute (Held in conjunction with the National ASEE Annual Conference), Atlanta, Georgia, June 2013

“Making the Transition to Active Learning”, presented at Universidad del Turabo, Puerto Rico, June 7-8, 2013

“Practical Instructional Design for Engineers”, presented at the Picatinny Arsenal, May 22-23, 2013

“Practical Instructional Design for Engineers”, presented at The Boeing Company, May 14-15, 2013

“Introduction to Active Learning”, New Jersey Institute of Technology, April 22, 2013

“Active Learning” ConocoPhillips Lecture at Oklahoma State University, April 12, 2013

“Introduction to Instructional Design”, Michigan State University, University, April 9, 2013

“Introduction to Instructional Design”, Kettering University, April 8, 2013

“Practical Instructional Design for Engineers”, presented at The Boeing Company, March 11-12, 2013

“Teaching Backwards” California Polytechnic Institute, March 14, 2013

“Introduction to Instructional Design”, Marquette University, Milwaukee, IL, Feb 9, 2013

“Introduction to Instructional Design”, Cornell University, Ithaca, NY, January 19, 2013

“National Effective Teaching Institute”, presented in Tampa, FL, Jan 6-8, 2013

“Practical Instructional Design for Engineers”, presented at The Boeing Company, December 11-12, 2012

“Advanced National Effective Teaching Institute”, presented at ASEE, Seattle, WA, October 7-8, 2012

“Practical Instructional Design for Engineers”, presented at The Boeing Company, October 4-5, 2012

“Practical Instructional Design for Engineers”, presented at The Boeing Company, August 16-17, 2012

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 25-27, 2012

“Practical Instructional Design for Engineers”, presented at The Boeing Company, July 19-20, 2012

“Practical Instructional Design for Engineers”, presented at The Boeing Company, July 16-18, 2012

“Overview of Instructional Design and Best Teaching Practices”, a week-long short course presented to visiting faculty from King Fahd University of Petroleum and Minerals (KFUPM), June 18-22

National Effective Teaching Institute (Held in conjunction with the National ASEE Annual Conference), San Antonio, TX, June 2012

“Practical Instructional Design for Engineers”, presented at The Boeing Company, May 24-25, 2012

“Making the Transition to Active Learning”, presented at Louisiana State University, May 21-22, 2012

“Making the Transition to Active Learning”, presented at Universidad del Turabo, Puerto Rico, May 15-16, 2012

“Making the Transition to Active Learning”, presented SE Regional ASEE meeting, April 1, 2012

“Making the Transition to Active Learning”, presented at U.C. Boulder, March 16-17, 2012.

“Practical Instructional Design for Engineers”, presented at The Boeing Company, Mar 13-14, 2012.

“Practical Instructional Design for Engineers”, presented at The Boeing Company, December 6-8, 2011.

“Practical Instructional Design for Engineers”, presented at The Boeing Company, August 17-18, 2011.

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 20-22, 2011

“Introduction to Instructional Design for Practicing Engineers”, presented at The Boeing Company, July 7-8, 2011.

National Effective Teaching Institute (Held in conjunction with the National ASEE Annual Conference), Vancouver, Canada, June 2011

“Writing Instructional Objectives”, “Making the Transition to Active Learning” and “Who Needs These Headaches: Forming and Managing Student Teams”, presented at Johns Hopkins University, February 16, 2011

“Cooperative Learning”, “An Introduction to Active Learning” and “Teaching Backwards to Promote Conceptual Change”, presented at Cornell University, January 18, 2011.

“Introduction to Instruction Objectives”, presented at New Mexico State University, October 2010

“Problem-Based Learning”, presented at Wichita State University, September 2010

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 19-21, 2010

National Effective Teaching Institute (Held in conjunction with the National ASEE Annual Conference), Louisville, KY, June 2010

“Teaching Engineering”, presented at Univeritat Rovira I Virgili, Tarragona, Spain, May 2010

“Inductive Teaching and Learning Methods”, presented at New Mexico State University, Jan 2010

“Introduction to Instruction Objectives”, presented at New Mexico State University, Jan 2010

“Problem-Based Learning”, presented at New Mexico State University, Jan 2010

“Incorporating Life Sciences into the Core Chemical Engineering Curriculum”, Bio-X Workshop, San Jose State University, San Jose, CA, July 30-August 1, 2009

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 20-22, 2009

National Effective Teaching Institute (Held in conjunction with the National ASEE Annual Conference), Austin, TX, June 2009

“Teaching Engineering”, presented at Univeritat Rovira I Virgili, Tarragona, Spain, May 2009

“Problem-Based Learning”, presented at the University of Washington, Seattle, WA, January 2009

“A Workshop on Faculty Workshops”, presented at Asilomar, CA, January 2009.

“Problem-Based Learning”, presented at the University of Michigan, Ann Arbor, MI, September 24, 2008.

“How to Engineer Engineering Education”, presented at Bucknell University to a national audience of engineering faculty, July 21-23, 2008

National Effective Teaching Institute (Held in conjunction with the National ASEE Annual Conference), Pittsburgh, PA, June 19-21, 2008

“Overview of Instructional Design for College Faculty”, presented at Louisiana State University, June 2-4, 2008

“Teaching Engineering”, presented at Univeritat Rovira I Virgili, Tarragona, Spain, May 12-13, 2008

“An Overview of Active Learning”, presented at the City College of New York, New York, NY, April 2008

“Making the Transition to Active Learning”, presented at the California Polytechnic University, San Luis Obispo, March 2008

“Making the Transition to Active Learning”, Southern Illinois University at Carbondale, September 2007.

“How to Engineer Engineering Education”, Bucknell, July, 2007, 30 engineering faculty from across the country

“Making the Transition to Active Learning”, plenary presentation at the TMS conference, Atlanta, July 2007.

“Making the Transition to Active Learning”, San Jose State University, June 2007.

“Making the Transition to Active Learning”, Milwaukee School of Engineering, May 2007

“Teaching Engineering” presented at Univeritat Rovira I Virgili, Tarragona, Spain, May 2007.

“Teaching Engineering”, presented at the Pennsylvania State University, May 2007

“Making the Transition to Active Learning”, presented at the national ASEE meeting, Chicago, IL, June 2006.

“How to Engineer Engineering Education”, Bucknell University, July, 2006, 25 engineering faculty from across the country.

“Making the Transition to Active Learning”, presented at the national ASEE meeting, Portland Oregon, June 2005.

National Co-Coordinator, Regional Effective Teaching Institutes, Educational Research Methods Division of ASEE, 2003 – 2005

“Making the Transition to Active Learning”, Southern Illinois University at Carbondale, September 2007.

“How to Engineer Engineering Education”, Bucknell University, July, 2007, 30 engineering faculty from across the country.

“Making the Transition to Active Learning”, plenary presentation at the TMS conference, Atlanta, July 2007.

“Making the Transition to Active Learning”, San Jose State University, June 2007.

“Making the Transition to Active Learning”, Milwaukee School of Engineering, May 2007

“Teaching Engineering” presented at Univeritat Rovira I Virgili, Tarragona, Spain, May 2007.

“Teaching Engineering”, presented at the Pennsylvania State University, May 2007

“Teaching Engineering” presented at Univeritat Rovira I Virgili, Tarragona, Spain, June 2006.

“How to Engineer Engineering Education”, Bucknell University, July, 2006, 26 engineering faculty from across the country

“Teaching Engineering” presented at Univeritat Rovira I Virgili, Tarragona, Spain, July 2005.

“How to Engineer Engineering Education”, Bucknell University, July, 2005, “Active Learning in the Classroom”, presented at Lipscomb University, Nashville, TN, April 2005.

“Teaching Engineering” presented at Univeritat Rovira I Virgili, Tarragona, Spain, July 5-July 7, 2004.

“How to Engineer Engineering Education”, Bucknell University, July 12-16 & July 19-23, 2004, supported by the NSF and presented to 48 engineering faculty from across the country.

“Active Learning”, presented to two classes of faculty at Baruch City University of New York, January 2004.

“Active, Collaborative, Cooperative and Problem-Based Learning”, Bucknell University, January 2004.

“How to Engineer Engineering Education”, Bucknell University, July 7-11 & July 14-18, 2003, supported by the NSF and presented to 48 engineering faculty from across the country.

“Making the Transition to Active Learning”, Annual ASEE Conference, Nashville, TN, June 21, 2003

“How to Engineer Engineering Education”, Bucknell University, July 8-12 & July 15-19, 2002, Supported by the NSF and presented to 48 engineering faculty from across the country.

“National Effective Teaching Institute”, Faculty Fellow, Annual ASEE Conference, Montreal, Canada, June 13-15, 2002

“Getting Started: “Things to Do Before the First Day of Class”, presented at Bucknell faculty orientation, August 2001

*Bucknell Teaching Workshops: 1998-2001*

During this time, I coordinated and frequently gave a weekly teaching workshop at Bucknell University designed to expose faculty to innovative teaching methods and to encourage collaborative efforts between faculty members interested in using these methods.

### **Consulting**

Client: Dr. Lilliam Martinez, Universidad del Turabo, NSF project “Structured Learning Assistant Program, STEM+H”. Working with STEM and Health faculty at all public and private universities in Puerto Rico on faculty development. 2016-

Client: The Boeing Corporation. Consultant with several groups within Boeing to provide training for knowledge transfer. Worked with senior engineers to improve the quality of their instruction materials. (2011- )

Client: Juan Morales, Universidad del Turabo, NSF 1449656 “Diffusion of Mobile Hands-on Learning in Puerto Rico Using the Analog Discovery Board” (2014-2016 )

Client: Teodora Shuman, Seattle University, NSF-TUES grant “Facilitating Problem-Based Learning with an Inverted Classroom (2014- 2018 )

Client: Brian Self, Cal-Poly University, NSF-TUES grant, “Using Inquiry-Based Activities to Repair Student Misconceptions in Engineering Dynamics” (2011- 2014)

Client: Brent Jessiek, Purdue NSF REE grant, "Global Engineering Competency: Definitions, Development Paths and Situational Assessment." (2012-2014)

Client: Stephen Turns, Penn State University (2012)

Client: Dr. Ronald Miller of the Colorado School of Mines as part of a project to develop concept questions in the thermal sciences (2011)

Client: Dr. J. Brignac of the Universidad del Turabo on a faculty development effort to have them incorporate problem and project-based learning into their curriculum (2011-2016)

Client: Dr. Debbie Chakra of Olin College on PBL and student self-efficacy (2010- 2012)

### **AWARDS**

Martin Award, for the best paper presented in the ASEE ChED Division in 2019

Martin Award, for the best paper presented in the ASEE ChED Division in 2018

Johansen-Crosby Lecturer, Michigan State University, 2017

Elected to the rank of Fellow, American Society for Engineering Education 2016

William H. Corcoran Award for the best CEE paper of 2016

Best Pic 1 paper award, ASEE National Convention, 2015

Chapter included in the winner of the AERA Division I Outstanding Publication Award for Books in 2014

Robert L. Rooke Professorship in Engineering, 2012-2015

William H. Corcoran Award for the best CEE paper of 2013

Conoco-Philips Lecturer, Oklahoma State University, 2012

William H. Corcoran Award for the best CEE paper of 2011

ERM and Pic V Best Paper, ASEE National Convention, 2011

Pic IV Best Paper, ASEE National Convention, 2010

ICHEME Hutchison Medal for Best Educational Paper of 2009.

The Lindback Award for Distinguished Teaching, 2008.

The American Society for Engineering Education Mid-Atlantic Section Outstanding Teaching Award, 2005.