

BRADLEY D. BOWEN

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EDUCATION

Doctor of Education – Technology Education, 2011

North Carolina State University, Raleigh, NC

Dissertation: Measuring teacher effectiveness when comparing alternatively and traditionally licensed high school technology education teachers in North Carolina

Master of Civil Engineering, 2002

North Carolina State University, Raleigh, NC

Bachelor of Science in Civil Engineering, 1996

Virginia Polytechnic Institute and State University, Blacksburg, VA

ACADEMIC WORK EXPERIENCE

North Dakota State University; Fargo, ND

Assistant Professor; 2011 – Present

Lecturer; 2010-2011 (Hired ABD)

Dual appointment: School of Education (55%) and Construction Management and Engineering (45%);
50% Teaching, 30% Research, 20% Service

Primary Responsibilities

- Teach undergraduate courses in both departments and graduate level courses in the SOE
 - Student feedback demonstrates exemplary teaching in all courses
 - Nominated for 2012-2013 College of Human Development and Education "Exceptional Contributions as an Emerging Teacher" Award
- Advise undergraduate and graduate students
 - Nominated for 2012-2013 Annual Award for "Excellence in Academic Advising of Undergraduates"
- Promote collaboration between education and engineering faculty for teaching, research, and outreach
- Develop STEM and engineering outreach programs for K-12 students, teachers, and administrators
- Build local and state-wide industry/educational partnerships

Courses Taught

EDUC 321: Introduction to Education

EDUC 322: Educational Psychology (taught in both on-line and face-to-face formats)

EDUC 600: Adolescent Development (taught on-line)

EDUC 750: Reflective Practice and Research in Education

CME 203: Building Construction: Methods and Materials

CME 310: Construction Quality (SDJZU, Jinan, China; 3 summer sessions, 2012, 2013, 2015)

CME 380: Construction Estimating: Quantities and Cost

Courses Developed

ENGR 291: Introduction to World Class Engineering I (First Year Engineering Experience)

ENGR 291: Introduction to World Class Engineering II (First Year Engineering Experience)

EDUC 600: K-12 Teacher Summer Externship

EDUC 600: K-12 Teacher Externship Action Research

EDUC 794: Practical Experience in Engineering

EDUC 794: Action Research in Engineering

STEM Endorsement approved by ND Teacher Licensure Board (ESPB); sequence of 5 courses; 12 credits; cross-listed for graduate and undergraduate; begins spring 2015.

William G. Enloe Magnet High School, Raleigh, NC

Teacher; Technology Education; 2005 – 2010

- Teaching courses, developing lesson plans, and improving curriculum materials for entry level and Advanced Studies in Engineering Courses in grades 9-12.
- Developed an advanced engineering course on high-powered rocketry
- Participated in district pilot program to incorporate engineering concepts into high school technology education curriculum
- Leader of school's Technology Education Professional Learning Community (PLC)
- Supervised student teachers from North Carolina State University
- Technology Student Association and Engineering Club advisor, 2006-2010
 - TSA National Chapter Excellence Award in 2009
- Participated in NASA's Student Launch Initiative (through Marshall Space Flight Center); 2007-2010
- Participated in NCSU's pilot for the Sustainable Transportation Education Program (STEP); 2010
- Head Girl's Golf Coach, 2007-2010
- Assistant Football Coach, 2006
- Science Olympiad Coach, 2006-2008

Wake Technical Community College, Raleigh, NC

Faculty Instructor; 2004

- One semester contract to teach two courses in the civil engineering department; Surveying and Construction Materials
- Advising students on curriculum requirements and course scheduling

INDUSTRY WORK EXPERIENCE

2003 – 2004, Weldon Steel Corporation, Weldon, NC

1999 – 2003, SteelFab of Virginia, Inc., Raleigh, NC

Project Manager

- Managed the fabrication, delivery, and installation of structural steel on commercial projects
- Coordinated subcontract work on jobsites
- Provided cost estimations, budgets, material, and equipment requirements
- Evaluated construction documents and contracts for quality and compliance
- Design work on small commercial structural steel framed buildings
- Taught seminars about the structural steel fabrication process

REFEREED PUBLICATIONS

Bowen, B. D., DeLuca, V. W., & Franzen, M. M. (under review). Knowledge Application versus Trial and Error in a Performance-Based Simulation Environment for Middle School Students. *Computers and Education*.

Ernst, J. V., **Bowen, B. D.**, & Williams, T. O. (in press). Freshman Engineering Students At-Risk of Non-Matriculation: Self-Efficacy for Academic Learning. *American Journal of Engineering Education*.

Bowen, B. D. & DeLuca, V. W. (2015). Comparing traditional versus alternative sequencing of instruction when using simulation modeling. *Journal of STEM Education: Innovations and Research*, 16(1), 5-10.

Ernst, J. V. & **Bowen, B. D.** (2014). Comparing Career Awareness Opportunities of Academically At-Risk and Non At-Risk Freshman Engineering Students. *American Journal of Engineering Education*, 5(2), 91-98.

Bowen, B. D. & Finch, J. (2014). There's an app for that! Using Smart Phone App Design for Engaging Students in Biological Ecosystems. *The Science Teacher*, 81(3), 41-47.

Hofman, J., Welch, A., & **Bowen, B. D.** (2014, March). Robotics Team Goes Varsity. *Tech Directions*. p. 13-17.

Bowen, B. D. (2013). Measuring teacher effectiveness when comparing alternatively and traditionally licensed high school technology education teachers in North Carolina. *Journal of Technology Education*, 25(1), 80-98.

NON-REFEREED PUBLICATIONS

Bowen, B. & DeLuca, V. W. (2010). Structures 2.0 [Computer software]. Louisville, KY: Whitebox Learning LLC.

REFEREED CONFERENCE PUBLICATIONS

Brevik, K., Jean, K., Bowman, F., & **Bowen, B. D.** (2015). *Impact of the You're Hired! Program on Student Attitudes and Understanding of Engineering*. Annual Proceedings of the American Society for Engineering Education, Seattle, WA.

Hansen, J., **Bowen, B. D.**, Pryor, S., Ewert, D., Pieri, R., Wells, D., Abdelrahman, M., Hanson, J. & Roy, L. (2014). *Analyzing the First Year of a Freshman Engineering Experience Pilot Program*. Annual Proceedings of the First Year Engineering Experience Conference, College Station, TX.

Brevik, K., **Bowen, B. D.**, Jean, K. & Bowman, F. (2014). *You're Hired! Infusing STEM and 21st Century Skills in Schools to Improve Attitudes Towards Engineering*. Annual Proceedings of the American Society for Engineering Education, Indianapolis, IN.

Bowen, B. D. (2013). *Teachers in Industry: Measuring the Impact of a K-12 Teacher Internship Program*. Annual Proceedings of the American Society for Engineering Education, Atlanta, GA.

CONFERENCE PRESENTATIONS

- Bowen, B. D.** (in press). *Teacher Externships: Authentic Transformation of Classroom Practices*. Presentation at the annual meeting of the International Technology and Engineering Educators Association, Washington, D.C.
- Bowen, B. D.** (2015). *Teachers in Industry: Teaching Transformed through Authentic Work Experience*. Annual Proceedings of the American Society for Engineering Education, Seattle, WA. (Poster Presentation).
- Bowen, B. D.** (2015). *Leveraging Industry Experiences to Transform Classroom Practices*. Presentation at the annual meeting of the International Technology and Engineering Educators Association, Milwaukee, WI.
- Bowen, B. D.** (2014). *K-12 Teacher Internships: Professional Development in the Engineering Design Process and STEM Learning*. Annual Proceedings of the American Society for Engineering Education, Indianapolis, IN. (Poster Presentation)
- Bowen, B. D.** (2014). *You're Hired! Infusing STEM and 21st Century Skills*. Presentation at the annual meeting of the International Technology and Engineering Educators Association, Orlando, FL.
- Duffield, S., **Bowen, B. D.**, St. Peter, D., Standifer, J. & Blackcloud, T. (2013). *The Impact of AVID Tutoring on College Tutors*. Presentation at the annual meeting of the Association for Middle Level Education, Minneapolis, MN.
- Bowen, B. D.** (2012). *Transdisciplinary Learning: One Contribution to STEM Education*. Presentation at the annual meeting of the International Technology and Engineering Educators Association, Long Beach, CA.
- Bowen, B. D.** (2009). *Rocketry: Motivating Students About Engineering and Design*. Presentation at the annual meeting of the International Technology Education Association, Louisville, KY.

INVITED PRESENTATIONS

- Bowen, B. D.** (2015, September 30). *Educators in Industry: K-12 Teacher Externship Program*. Dakotas Project Lead The Way Conference. Fargo, ND.
- Bowen, B. D.** (2015, July 12). *Teachers in Industry: K-12 Teacher Internship Program*. Midwestern Legislative Conference, Council of State Governments. Bismarck, ND.
- Bowen, B. D.** (2015, January 19). *Teachers in Industry: K-12 Teacher Internship Program*. West Fargo "InSourced" Professional Development. West Fargo, ND.
- Bowen, B. D.** (2013, July 9). *Exposing in-service teachers to the different strands of engineering*. West Fargo STEM Academy. West Fargo, ND.
- Bowen, B. D.** (2013, April 15). *Transforming Education and Healthcare: A Unique Collaboration Between Teacher and Industry to Create a Culture of Success*. Presentation at the Sanford PROMISE Discovery Learning Series. Fargo, ND.

Bowen, B. D. (2012, July 30). *Professional development to improve engineering practices for professors at tribal community colleges*. Pre-Engineering Education Collaboration: Pipeline for Tribal Pre-engineers to Society (PEEC:PTiPS). Fargo, ND.

FUNDED PROJECTS

- *Research Experiences for Teachers: Engineering in Precision Agriculture and Sustainability for Rural STEM Educators*. National Science Foundation, Research Experiences for Teachers Program. 2016-2018. \$587,517.
- *Pre-Engineering Education Collaboration 2+2+2+ Infinity: Pipeline for Tribal Pre-Engineering to Society (PEEC:PTiPS)*. National Science Foundation, Tribal Colleges and Universities Program. 2016-2017. \$164,999.
- *Educators in Industry: K-12 Externship Program*. Legislative Bill accepted into North Dakota Governor's Budget; 2015-2017; \$50,000.
- *Teachers in Industry: K-12 Teacher Internship Program*. Collaboration with John Deere Electronic Solutions, Microsoft, Bobcat, Sanford Health, Ulteig Engineering, Moore Engineering, KLJ Engineering, and Caterpillar; along with the South East Education Cooperative (SEEC) and the Greater Fargo-Moorhead Economic Development Corporation (GFMEDC); 2011 – Present; \$54,000 to date.
- *The effects of the AVID program on the tutor*. Teacher Education Bush Foundation Grant; 2013; \$975.
- *Comparing Authentic versus Non-Authentic Project-Based Learning Activities in Seventh Grade Mathematics*. NDSU College of HD&E research grant to include two undergraduate students in formal research projects; 2011-2012; \$1,000. (Internal)
- *Student Launch Initiative: High School High-Powered Rocketry Program*. National Aeronautics and Space Administration (NASA); 2007-2010; \$13,600.
- *Improvement of a High School High-Powered Rocketry Curriculum*. Lockheed Martin Corporation and Curtiss-Wright Corporation; 2008-2009; \$13,500.

OUTREACH

- Coordinate seminars in STEM learning methods for Native American community college instructors
- Present engineering lessons at local elementary schools
- Coordinated after-school LEGO club for 3rd and 4th grade students at local elementary schools
- Coordinator; Teachers in Industry conference to build industry/educational partnerships
- Present to local school system administrators, teachers, and industry on the research about the Teachers in Industry program
- Presenter at annual Bison BEST Robotics Kick-off event and regional competition
- Taught one week at STEM Center Middle School about incorporating authentic activities into mathematics classrooms
- Coordinator of program to place potential School of Education applicants into K-12 classrooms to earn volunteer hours needed for application process

- Coordinator and presenter at the Pelican Rapids High School Rocketry and Robotics summer camp
- Volunteer for NDSU's STEM Kids summer camp
- Mentor for West Fargo STEM Center Middle School Team America Rocketry Challenge Team

ORGANIZATIONS

- Member of the International Technology and Engineering Educators Association (ITEEA)
- Member of the American Society for Engineering Education (ASEE)
- Member of the Association for Middle Level Education (AMLE)
- Member of Epsilon Pi Tau (EPT); Alpha Pi Chapter; North Carolina State University
- Member of the National Association of Rocketry (NAR)

NATIONAL / INTERNATIONAL SERVICE

- American Society for Engineering Education: K-12 Executive Committee

UNIVERSITY SERVICE

- NDSU Habitat For Humanity Faculty Advisor; 2014 – present
- FORWARD Trained Ally
- FORWARD Search Committee Trained

COLLEGE SERVICE

- Notebook Judging Coordinator for NDSU Bison BEST Robotics Competition (2011-present)
- Notebook Judging Coordinator for Northern Plains BEST Robotics Regional Competition (2012-present)
- College of Engineering First Year Programs Committee
- College of Engineering K-12 Committee
- K-12 Outreach Coordinator, Teacher Education, and Counselor Education faculty search committees

DEPARTMENT SERVICE

- School of Education Executive Committee, 2014-present (Chair 2015-present)
- Teacher Education Bush Grant Recruitment Committee; initiative to improve recruitment of high quality students into teacher education
- Teacher Education Bush Grant Place and Support Committee; initiative to improve placement and support of new teachers
- Participation in NCATE (Teacher Education), ACCE (Construction Management); and ABET (Construction Engineering) Accreditation Process
- Construction Management and Engineering Academic Affairs committee
- Construction Management and Engineering faculty and department head search committees
- Construction Management and Engineering NAHB Student Chapter Advisor; 2012 – present
- Residential Construction Management Competition Coach; 2012 – present

PROFESSIONAL SERVICE

- Founding design team member of the ND STEM Network
- ND STEM Network Research and Data Collection Committee
- Founding design team member of the ESTEEM Network (Encouraging Science, Technology, Engineering, Entrepreneurship, and Mathematics) for the Red River Valley, ND
- Session Chair for ASEE Annual Conference; K-12 Division
- Reviewer for the American Journal of Engineering Education (AJEE)
- Reviewer for the Journal of STEM Education: Innovations and Research (J-STEM)
- Reviewer for the Journal of Pre-College Engineering Education Research (J-PEER)
- Reviewer for ASEE Annual Conference; K-12 Division

CERTIFICATIONS AND AWARDS

- Certified Technology Education Teacher in North Carolina; grades 7-12
- Recipient of the College of Human Development and Education's annual Exceptional Contributions to Service/Outreach Award, 2014-2015.
- Nominated for 2012-2013 Annual Awards for Excellence in Academic Advising of Undergraduates
- Nominated for 2012-2013 College of Human Development and Education "Exceptional Contributions as an Emerging Teacher" Award
- American Council for Construction Education (ACCE) visiting accreditation team member certified
- Level 2 High Powered Rocketry certified by the National Association of Rocketry
- Project Lead The Way certified for Introduction to Engineering Design course
- 2009 North Carolina State University Inspirational Teacher Award Recipient
- 2008 Team America Rocketry Challenge National Champions
- 2007 Team America Rocketry Challenge 3rd Place National Finals
- Engineer in Training certification; Virginia; 1996

RESEARCH INTERESTS

- STEM and engineering-related professional development for in-service K-12 teachers
- Studying the effectiveness of authentic project-based learning activities on student learning
- Retention factors for university 1st year engineering students
- The integration of virtual modeling with traditional instruction
- Improving participation, resources, and classroom transition for alternatively licensed educators