

Dr. Axelle P. Faughn

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1. ACADEMIC HISTORY:

- August 2013 – Present: **Associate Professor**, Mathematics Education, Western Carolina University.
- August 2007 – July 2013: **Assistant Professor**, Mathematics Education, Western Carolina University.
- September 2005-July 2007: **Assistant Professor**, Mathematics Education, California State University, Bakersfield.
- August 2004-July 2005: **Assistant Professor**, Mathematics Education, University of Puerto Rico at Mayaguez.
- January 2003-July 2004: **Post doctorate**, Mathematics Education, Center for Research in Mathematics Education, North Carolina State University.
- December 2002: **Ph.D** in Mathematics (Computer Algebra), NCSU / Rennes 1 – Thesis “*Solving Linear Differential Equations of Order four using Equations of Lower Order*”.
- 2001: National High School **Teaching Certification** in France – Rank “**Agregée**” (National French competitive examination for high-school teachers with additional European Teacher Certification).
- 1998: **Master’s degree** in Mathematics, Université de Rennes1, France.
- 1992-1996: **Bachelor’s degree** in Mathematics, Université de Rennes1, France.

2. TEACHING/SERVICE:

➤ July 2004-present:

- Teaching Experience: (* at WCU)
 - Pre-Calculus*
 - Introductory Calculus*
 - Secondary pre-service teachers Math. Ed. methods courses*
 - Undergraduate senior research seminar in Math. Ed.*
 - Calculus I* & II
 - Mathematics for El. Ed. Pre-service teachers course sequence*
 - Discrete Dynamical Models (graduate)
 - Introduction to Research in Mathematics Education (graduate)*
 - Problem Solving*
 - Teaching Mathematics with Technology (graduate)*
 - Mathematics for Liberal Studies – Face-to-face and Online*
 - Informal Geometry*
 - Student Teaching Supervision in Secondary Mathematics*
- Selected Service to Profession/Community Outreach:

- International Programs and Services, **faculty-led trip coordinator**, WCU, September 2013-June 2014.
- Mathematics Teacher Retention Symposium **steering committee member**, November 2010 – March 2012;
- NC-Quest RtI Professional Learning Team **Workshop Leader**, August 2011;
- M4M in Math & Science Leadership **Institute Leader**, July 2010;
- M4M Developing Inquiry Lessons **Workshop Leader**, May 2010;
- M4M Inquiry and Learning Walks **Workshop Leader**, April 2010
- Discovery Learning in Math and Science **Workshop Leader**, July 2009;
- Foundations in Geometry **Workshop Leader**, July 2008;
- Mathematics Visiting Speakers **Program Coordinator**, Fall 2008 – present;
- School University Teacher Education Partnership **University Contact**, Spring 2008;
- Proportional Reasoning **Consultant** for the Texas Instrument – TODOS Proportional Reasoning Taskforce, Summer 2007;
- Bakersfield Math Council **Conference Host and Speaker** at CSUB, 10/21/2006;
- Beginning Teacher Support and Assessment **Workshop Leader** with Kern County High School District, 2006/2007.
- Middle school mathematics curriculum reform **Coordinator** for AFAMaC, 2004/2005.

- Local Talks:

- “*Systemic and Cultural Differences in Mathematics Education: Insights from a visit to East Asia*” - Mathematics and Computer Science Colloquium Series, Western Carolina University, 10/04/2012
- “*Issues of teacher retention: Learning from a 4-year professional development intervention*” – Mathematics and Computer Science Colloquium Series, Western Carolina University, 04/19/2012
- “*The Game Show: Using Different Approaches to solve a Mathematics Problem*” – Teachers of Tomorrow Reaching to Teach Conference, 09/28/2010
- “*Highlights of the French Educational System*” – Given to a comparative education class in Summers 2006, 2007, 2009, 2011, 2013, 2014.
- “*Back to Basics: Engaging Students through Inquiry*” - WCU Beta Student Chapter of the North Carolina Council of the Teachers of Mathematics talk series, 09/15/2010
- “*People Proportions, Ratios that shape the world*” - WCU Beta Student Chapter of the North Carolina Council of the Teachers of Mathematics talk series, 01/21/2009.
- “*The Mathematics of Change in Middle School: Using Handheld Calculators to Foster Connections*” WCU Beta Student Chapter of the North Carolina Council of the Teachers of Mathematics talk series, 10/31/2007.
- “*Investigating a Proportional Reasoning approach to teaching trigonometry*”, California State University Bakersfield Departmental Seminar, 10/04/2006.
- “*Proportional Reasoning: Linking instructional representations of curricular topics*”, Utah State University, 03/04/2005.

- Selected Professional Enrichment:

- Professional Development for Korean Teachers attended at ICME 12 conference, Seoul, South Korea, July 2012.

- TI-Nspire Webinars on using the device for teaching Calculus, Geometry, and Algebra, March 2011.
- Carnegie Learning Webinar on Common Core implementation, February 2011.
- Tammy Stiles and Kerri Bernhardt presentation on how to efficiently use the Smartboard in the Mathematics classroom, November 2010.
- North Carolina Department of Public Instruction workshop on Common Core implementation, November 2010.
- Teaching Capstone for Secondary Mathematics Majors mini-course, at MAA/AMS Joint Meetings in Washington DC, January 2009 with Provost Fund award.
- WebCat Fundamentals and Certification workshop, at WCU Fall 2007
- Passages to E-learning Retreat, at WCU Fall 2007
- Rubric Design workshop, at CSUB, Spring 2007
- Developing online courses with WebCT, at UPRM, Spring 2005
- Texas Instrument Situational Leadership workshop, at UPRM, Fall 2004

- Committee work:

- 2007-Present
- Contest and Awards Committee – Co-Chair (Ongoing)
 - Mathematics Education Curriculum Committee – Co-Chair (Ongoing)
 - Graduate Committee (2008-2013)
 - Professional Education Council (University, ongoing)
 - Student Award Committee (Arts & Sciences, 2012 – present)
 - Mathematics Curriculum Committee (2009-2011)
 - Colloquium Committee (2010-2011)
 - Faculty Load Committee (2008-2009)
 - Mathematics Education + Mathematics Search Committees (2008-2009, 2010-2011); LMS director search committee (2011-2012)
 - Recruitment, Retention and Graduation Committee (Arts & Sciences, 2009-2011)
 - Mathematics Education Graduate Re-visioning Taskforce (CEAP, 2010-2011)
- 2005-2007
- Liberal Studies Committee
 - Math. Ed. Committee
 - Graduate Studies Committee
 - Departmental Seminar co-organizer

➤ **January 2003- Spring 2004: Postdoctoral research and teaching**, CRMSE, NCSU.

- Apprenticeship in teaching undergraduate and graduate Math. Ed. courses with Dr. Berenson, Dr. L. Stiff (former NCTM President) and Dr. R. Tzur.
- Research on instructional representations of proportional reasoning topics.
- Data collection and analysis on girls' achievement in high level Math classes. NSF-supported Girls On Track co-organizer and team leader.

➤ **2000-2001: 6th & 10th grade certified mathematics teacher** in France, with a **European Teacher specialization** obtained in Birmingham, UK.

3. SCHOLARSHIP:

➤ **Editor's work:**

Faughn, A. P., Pence, B. (Eds.). (2012). Research and Content Strand. In *Monograph on Mathematics Teachers Retention* – as one of the final products of the PME-NA working group: Supporting Teachers to Increase Retention, published October 2012 – 2 page introduction, 90 page chapter.

➤ **Published Papers:**

Borchelt, N., Faughn, A., Jaqua, K., Best, K. (2013). TPACK Pathways that Facilitate CCSS Implementation for Secondary Mathematics Teacher Candidates in *Common Core Mathematics Standards and Implementing Digital Technologies*, IGI Global Publishing.
Peer-Reviewed Book Chapter, Equal contributions, 18 pages.

Faughn, A. P., Fry-Bohlin, C. (2012). Empowering Mathematics Teachers Through a Graduate Mathematics Program and Increased Leadership Opportunities. In *Monograph: Mathematics Teachers Retention*.
Peer-Reviewed Contribution, Principal author, 10 pages limited by authors guidelines.

Faughn, A. P., Pence, B., Canzone, J., Tuba, I. (2012). Mathematics Teacher Retention Working Group Summary: Raising awareness to better support mathematics teachers and to increase retention. In *Monograph: Mathematics Teachers Retention*.
Peer-Reviewed Contribution, Principal author, 10 pages limited by authors guidelines.

Faughn, A. P. (2012). Issues of Psychology of Mathematics Education – A Review of the Literature Supporting Research in Mathematics Teacher Retention. In *Monograph: Mathematics Teachers Retention*.
Peer Reviewed Paper, Principal author, 10 pages limited by authors guidelines.

Faughn, Axelle, P. (2012). *When Professional Development provides opportunities to leave: Reflections on a 4-year Mathematics Teacher Retention intervention* in Proceedings of Topic Study Group 25 on Professional Development at ICME 12 held in Korea, July 2012.
Peer Reviewed Paper, 8 pages limited by conference guidelines.

Faughn, Axelle P., Brown, Kyndall; Kent, Naomi; Tuba, Imre. (2011). *Supporting Beginning Mathematics Teachers with Technology-based Professional Development*, in the Paper Repository of the 2011 meeting of the American Educational Research Association, New Orleans, LA, April 2011.
Peer-Reviewed Abstract - Principal author, 56% acceptance, 24 pages.

Faughn, Axelle P. (2009). *Effects of the calculator on students' solutions to a proportional reasoning assessment: Implications on diagnosing students thinking*, in Proceedings of the 2009 PME-NA conference, Atlanta, GA, September 2009.
Peer-Reviewed Paper, 30% acceptance, 8 pages limited by conference guidelines.

Faughn, Axelle P.; Pence, Barbara. (2009). *Supporting Teachers to Increase Retention*, in Proceedings of the 2009 PME-NA conference, Atlanta, GA, September 2009.
Peer-Reviewed Paper - Equal contributions, 30% acceptance, 8 pages limited.

Faughn, Axelle P.; Kent, Naomi; Felter-Murphy, Terran. (2009). *Teacher Retention Supported by Professional Development: Models and Research within Two Specific Sites*, Abstract in Proceedings of the annual meeting of the American Educational Research Association, San Diego, CA, April 2009.
Peer-Reviewed Abstract - Equal contributions, 36% acceptance, 13 pages paper submitted to discussant.

Faughn, Axelle P.; Felter-Murphy, Terran. (2007). *Using interactive-geometry software based instruction in a college trigonometry course*, in Online Proceedings of the Conference on Research in Undergraduate Mathematics Education, San Diego, CA, February 2007.
Peer-Reviewed Full Proposal - Equal contributions, 10 pages limited by conference guidelines.

Berenson, Sarah; Person, Axelle C. (2004). *The role of numbers in Proportional Reasoning: A prospective teacher's understanding*, in Proceedings of the 2004 Meeting of PME 28, Norway, July 2004.
Peer-Reviewed Paper - Principal author, 67% acceptance, 9 pages limited by conference guidelines.

Berenson, Sarah; Greenspon, Paula; Michael Joan; Person, Axelle C.; Vouk Mladen. (2003). *“Women and Information Technology (WIT): A comparative study of young women from middle grades through high school and into college”*, in Proceedings of The National Science Foundation's ITWF & ITR/EWF PI Conference, October 2003.

Berenson, Sarah; Longest, Michelle P.; Person, Axelle C. (2003). *Relationship between Proportional Reasoning and Achievement for Early Adolescent Girls*, in Proceedings of the 2003 Joint Meeting of PME 27 and PMENA, Hawaii, July 2003.
Peer-reviewed Poster

➤ **Conference Presentations:**

Invited research-related presentations

“Research in Mathematics Teacher Retention: Lessons learned from the field” – given for a featured speaker address at the Mathematics Teacher Retention Symposium held in Los Angeles, CA, in March 2012.

“The Role of Mathematics Faculty in Supporting Teachers to Increase Retention: A Constructivist Model.” – Presented for an MAA contributed session at the MAA-AMS Joint Meetings in Washington, DC, January 2009.

“Using Multiple Instructional Representations to enhance Conceptual Understanding”- Instituto para el Fortalecimiento en la Enseña de las Matemáticas Annual Conference,

University of Puerto Rico in Mayaguez, 06 November 2004.

Contributed research-related presentations

“Discussion Group 11: Mathematics Teacher Retention” – organized for the Meeting of the International Congress on Mathematical Education 12 held in Seoul, Korea, July 2012.

“Mathematics Teacher Support with Technology: Challenges, Successes and Reflections”- Presented at the NCCTM State conference held in Greensboro, NC, October 2011.

“Impacting the Work, Perceptions and Retention of New Mathematics Teachers through Professional Development: Research/Implications”, Research Symposium under the Research on Teacher Induction Special Interest Group given at the annual meeting of American Educational Research Association in New Orleans, LA, April 2011.

“Building Retention through Professional Development: Research/Implications” – Research symposium at the NCTM Research Pre-session conference held in San Diego, CA, April 2010.

“Technology-based Professional Development and Support” – 3 sites, 3 models” - Presented at the Research Pre-session of the 2010 National Council of Teachers of Mathematics National Conference in San Diego, CA April 2010, with Imre Tuba.

“Empowering Beginning Teachers through Technology-focused Professional Development” – Extended session at the Teachers Teaching with Technology conference held in Atlanta, GA, March 2010

“Working Group: Supporting Teachers to Increase Retention” – Organized 3 separate working sessions in 2009 PME-NA conference held in Atlanta, GA, September 2009; 2010 PME-NA conference held in Columbus, OH October 2010; 2011 PME-NA conference held in Reno, NV October 2011.

“Preparation, support and retention of middle and high school mathematics teachers in urban districts: Views from the East and West coasts” – Research Symposium on Teacher Retention given for Division K at the annual meeting of AREA in San Diego, CA, April 2009.

“Teacher Attrition and Mobility: Fostering collegiality to improve retention” – Presented at the NCCTM State conference held in Greensboro, NC, October 2008.

“Teacher Retention through Building Professional Learning Communities” – extended session at the 40th Annual NCSM Conference in Salt Lake City, Utah, April 2008, with Carol Cronk, Davida Fischman, Susie Hakansson, Barbara Pence, Chris Yakes.

“How do the components and structure of a curriculum affect the knowledge of mathematics teachers?” - ICMII5, Brazil, Work Session leader with Luis Caceres, and Arturo Portnoy, May 2005.

➤ **Grants awards:**

- NSF Travel Award for ICME 12 held in South Korea, July 2012, \$2500.
- NC-Quest Responsiveness to Intervention with Transylvania County, awarded March 2011, \$299,44, renewed Spring 2012, \$150,000.
- NC-Quest Grant “Mentoring for Meaning in Math and Science”, awarded March 2009, \$299,593, renewed Spring 2010, \$140,739.
- CMP-STIR Research Associate, awarded January 2007 – October 2012, \$405,960.
- Research Council of the University Grant, Fall 2006, CSUB.

Affiliations: California Association of Mathematics Teacher Educators
Mathematical Association of America (2007-2009)
National Council of Supervisors of Mathematics (2008-2009)
North Carolina Council of Teachers of Mathematics (Current Vice-President for Colleges in the Western Region representative)
National Council of Teachers of Mathematics

Languages: English, French, Spanish, German, and some Chinese. ESL trained instructor.

Skills: Wilderness First Responder, Outdoor Emergency Technician, National Ski Patroller.