HELEN E. BURN, PH.D.

EDUCATION

Ph.D. Education, University of Michigan, Ann Arbor, Michigan, 2006
M.S. Mathematics, Western Washington University, Bellingham, Washington, 1994
B.S. The Evergreen State College, Olympia, Washington, 1992

INSTRUCTION AND OTHER PROFESSIONAL EXPERIENCE

2009-Present	*Director, Curriculum Research Group,* Highline College
2013-Present	*Adjunct Faculty,* College of Education, Seattle University
2006-2009	*Chair, Division of Pure and Applied Sciences,* Highline College
2002-2006	*Graduate Student Research Assistant,* University of Michigan
1998-2000	*Coordinator, Department of Mathematics,* Highline College
1995-1996	*Teaching Assistant,* University of Colorado Boulder
1994-Present	*Mathematics Instructor* (awarded tenure in 1998), Highline College
1992-1994	*Teaching Assistant,* Western Washington University
1990-1992	*Teaching Assistant and Math Tutor*, The Evergreen State College,
1991	*Research Assistant,* Washington State Institute for Public Policy
1988-1990	*Sales Representative*, Virgus Computer Systems, Inc., Seattle, WA
1982-1988	*Court Reporter,* Holcomb Reporting Service, Inc., Muskegon, MI

SELECTED ACADEMIC SERVICE

Principle Investigator, *Transitioning Learners to Calculus in Community Colleges* (NSF DUE I-USE #1625918), 2016 – present
StatPREP Pacific Northwest Hub Leader (NSF DUE 1626337), 2017 - present
Chair, Pathways Joint Subcommittee of the American Mathematical Association for Two-Year Colleges, 2018 - present
Committee Member, Mathematical Association of America's Committee on Undergraduate Programs in Mathematics (CUPM), 2017 – present
CUPM Liaison for the MAA/ASA Joint Committee on Undergraduate Statistics Education, 2019 - present
Co-Chair, *Washington Mathematics Pathways Taskforce*, 2015 – 2019
Evaluator, *Redesigning the Math Placement Process Grant* (College Spark), 2015 – 2018
Chair, Test Writing Team, CLEP College Mathematics Test, *Educational Testing Service,* 2015 – 2018, member since 2010
STEM Prep Content Design Team, *The New Mathways Project,* Dana Center, The University of Texas at Austin, 2013 – 2014
Mathematics Consultant to *Characteristics of Special Programs in College Calculus* (NSF DRL #0910240), sponsored by the Mathematical Association of America, 2012 – 2016
Dissertation Committee, Ann Sitomer, Portland State University, 2011 – 2014
Co-PI, National Science Foundation DUE-0633402 and DUE-0633755, *The Math You Need, When You Need It: Modular Student Resources to Encourage Successful Incorporation of Quantitative Concepts in Introductory Geoscience,* 2006 – 2013
Program Evaluator, Highline College Rethinking Pre-College Mathematics Grant, 2010 – 2012
Washington State Board of Education Math Standards Panel, 2007 -2009
Achieving the Dream Data Team and Intervention Team Member, 2006 – present
Highline College Educational Association (HCEA) Treasurer, 1998 – 2002

PROFESSIONAL AFFILIATIONS

Council for the Study of Community Colleges, 2006 – present
Association for the Study of Higher Education, 2003 – present
The Mathematical Association of America, 1992 – present
The American Mathematical Association of Two-Year Colleges, 1994 – present

RESEARCH EXPERIENCE

Director, Curriculum Research Group, Highline College, 2009 – present

- Conducting evaluation research on corequisite mathematics courses for *Highline Corequisite Mathematics Initiative* through College Spark of Washington.
- Conducting research on student transition to calculus through *Transitioning Learners to Calculus in Community Colleges* through NSF DUE I-USE #1625918.
- Conducting research on successful calculus programs through *Characteristics of Successful Programs in College Calculus* through NSF DRL #0910240 sponsored by the Mathematical Association of America.
- Conducting evaluation research for *Highline College Mathematics Placement Redesign* through College Spark of Washington.
- Conducting research on the influence of adjunct faculty on department-wide change efforts and case studies of curriculum redesign through Rethinking Pre-College Mathematics Grant.
- Conducting research on web-based mathematics modules to remediate mathematics in introductory geoscience courses through *The Math You Need, When You Need It*, NSF DUE-0633402/0633755.
- Conducting research on the transition to college of student veterans in pre-college mathematics.
- Conducting research on the transition pathways and persistence of basic skills students to college courses using the Washington State Student Achievement Database.

Graduate Student Research Assistant, Center for the Study of Higher and Postsecondary Education, University of Michigan, 2002-2006

- Dissertation: *Factors That Shape Community College Mathematics Faculty Reasoning about College Algebra Reform*. The dissertation used case-study methods to explore curricular influences at play as mathematics faculty at three community colleges reason about college algebra reform.
- Conducted program evaluation for *Engineering 101: Introduction to Algorithmic Thinking*, 2003-2006, University of Michigan, Ann Arbor, Michigan. Research led to development and evaluation of an instructional intervention aimed at increasing students' perceptions of importance of programming to engineering majors, focusing on women and students of color.

- Conducted research on incorporating design principles into web-based instruction using the *Web Lecture Archive Project*, 2002-2006, University of Michigan, Ann Arbor, Michigan.

- Evaluated the use of *GeoPad* in a field camp experience for geoscience majors as part of National Science Foundation grant, 2005-2006. Developed written assessment of spatial reasoning and interview protocol.

PUBLICATIONS

- Burn, H., Thrill, C., Mesa, V., Zamani-Gallaher, E., & Wood, J. L. (2020). Mathematics placement, courses, and use of local data in the STEM math pathway in predominantly black institutions. *MathAMATYC Educator, 11*(3), 4-11.

- Burn, H. (2019). IMPACT on Mathematics Pathways and Developmental Course Redesign. *MathAMATYC Educator, 10*(3), 19-22.

- Burn, H., Zamani-Gallaher, E., Mesa, V., & Wood, J. L. (2019). Transitioning learners to calculus: Findings from a national survey of mathematics chairs in two-year colleges by Hispanic-serving institutional designation. *MathAMATYC Educator, 10*(2), 5-13.

- Burn, H., & Mesa, V. (2017). Not Your Grandma's Lecture: Interactive Lecture in Calculus I in the CSPCC Two-Year Cases. *MathAMATYC Educator, 8*(3), 24-29.

- Burn, H., White, N., & Mesa, V. (2016). Improving Calculus I in community colleges: It takes a [multidisciplinary] village. *Community College Journal of Research and Practice, 40*(6), 550-553. DOI: 10.1080/10668926.2015.1076749

- Mesa, V., Burn, H., & White, N. (2015). Good teaching of Calculus I. In D. Bressoud, V. Mesa, & C. Rasmussen (Eds.), *Insights and Recommendations from the MAA National Study of College Calculus* (pp. 83-91). Washington, DC: MAA Press.

- Burn, H. E., & Mesa, V. (2015). The Calculus I curriculum. In D. Bressoud, V. Mesa, & C. Rasmussen (Eds.), *Insights and Recommendations from the MAA National Study of College Calculus* (pp. 45-58). Washington, DC: MAA Press.

- Burn, H. E., Mulcahy, M., & Endicott-Popovsky, B. (2015) Easing student veterans' transition to cybersecurity and STEM through a "Math Boot Camp." *The Colloquium for Information System Security Education (CISSEE): Educational Approaches to Transition Former Military Personnel into the Cybersecurity Field, 2*(2), 84-102.

- Burn, H. E., Mesa, V., & White, N. (2015). Calculus I in Community Colleges: Findings from the National CSPCC Study. *MathAMATYC Educator, 6*(3), 34-39.

- Burn, H. E., & Kawai, J. (2014). The Adjunct Faculty Development Process. *MathAMATYC Educator, 6*(1).

- Gerhard, G., & Burn H. E., (2014). Effective engagement strategies for non-tenure-track faculty in precollege mathematics reform in community colleges. *Community College Journal of Research and Practice, 38*(2-3), 208-217.

- Burn, H. E., Baer, E. M. D., & Wenner, J. M. (2013). Embedded mathematics remediation using *The Math You Need, When You Need It:* A 21st century solution to an age-old problem. *About Campus, 18*(5), 22-25.

- Wenner, J. M., Baer, E. M. D., & Burn, H. E., (2013). Discipline-based remediation: Bridging the mathematics gap. *Eos, Transactions American Geophysical Union, 94*(41), 361-362.

- Burn, H. E. (2012). Factors that shape curricular reasoning about college algebra reform. *MathAMATYC Educator, 4(1),* 23-28.

- Wenner, J. M., Burn H. E., & Baer. E. M. (2012). The Math You Need, When You Need it. *In the Trenches, 2*(2), 1-7.

- Wenner, J. M., Burn H. E., & Baer. E. M. (2011). Successful implementation of The Math You Need, When You Need it: Asynchronous, online mathematics tutorials to address diverse student skills in introductory geoscience. *Journal of College Science Teaching, 41(1),* 16-24.

- Burn, H. E., & Gerhard, G. (2011). Pathways and persistence: Basic skills students at one Washington state community college. *Community College Journal of Research and Practice, 35*(3), 220-233.

- Dey, E. L., Burn, H. E., & Gerdes, D. (2009). Bringing the classroom to the Web: Effects of using new technologies to capture and deliver lectures. *Research in Higher Education, 50*(4), 377-393.

- *Asynchronous, Online Resources to Remediate Mathematical Skills: Five Institutions' Success with The Math You Need, When You Need it.* (Wenner, Baer, & Burn, 2010). Geological Society of America *Abstracts with Programs.*

- *The Math You Need When You Need It: Web-based Modules to Help Students Succeed in Introductory Geoscience Courses.* (Baer, Wenner, & Burn, 2008). Geological Society of America *Abstracts with Programs.*

- *Mathpatch: A Just-in-Time Approach to Teaching Quantitative Skills and Reducing Attrition in an Introductory Geoscience Course.* (Baer, Whittington, Burn & Gilbert, 2005). Geological Society of America *Abstracts with Programs.*

- *Learning from the Experiences of Women and Under-Represented Minorities in a First-Year Programming Course.* Proceedings of the 2004 International Conference on Engineering Education.

SELECTED REFEREED CONFERENCE PRESENTATIONS (WITHOUT ACCOMPANYING PUBLICATION)

- Burn, H., Mesa, V., and The TLC3 Research Team. (2019, November 14-17). Transparency of dimensions of success in minority-serving community colleges. AMATYC 2019 Conference, Milwaukee, WI, United States.

- Zamani-Gallaher, E., Thrill, C., Burn, H., Wood, J. L., & Mesa. V. (2019, October 18-19). The Utilities of Local Data in STEM Math Pathways: Exploring African American Student

Placement, Course Taking, and Engagement at a PBI. Richland College 2019 MSI Convening, Dallas, TX, United States.

- Burn, H., Mesa, V., Wood, J. L., & Zamani-Gallaher, E. (2019). A wake-up call: Mathematics as an equalizer for social justice and equity. Paper presented at the annual conference for the American Educational Research Association, Toronto, Canada.

- Burn, H., Mesa, V., Wood, J. L., & Zamani-Gallaher, E. (2018). Multiple dimensions of an equity-minded mathematics program. Paper presented at the annual conference for the Council for the Study of Community Colleges, Addison, Texas.

- Burn, H., & Waits, S. (2018). Back to the classroom? Implications of comprehensive mathematics curriculum and placement redesign. Paper presented at the annual conference for the Council for the Study of Community Colleges, Addison, Texas.

- Burn, H.E., & Mesa, V. (2014, April). Resources that shape Calculus I instruction in community colleges: Findings from a national study of community college calculus programs. Paper presented at the annual conference for the Council for the Study of Community Colleges, Washington, D.C.

- Mesa, V., White, N., & Burn, H.E. (2014, April). Academic and social integration revealed in Characteristics of Successful Programs in College Calculus Project: The two-year college context. Paper presented at the annual conference for Research in Undergraduate Mathematics Education, Denver, Co.

- *Non-Tenure-Track Community College Mathematics Faculty Learning through Faculty Inquiry Groups*. Paper presented at the annual Western Region Research Conference on the Education of Adults, October, 2013, Seattle, Washington.

- *Veteran's Transition to College: Theoretical Models and Insights from a Community College "Math Boot Camp."* Paper presented at the annual conference of the Pacific Sociological Association, March, 2013, Reno, Nevada.

- *The Elephant in the [Class]Room: Involving Part-time Faculty in Efforts to Improve Student Success in Community College Developmental Mathematics.* Paper presented at the annual conference for the Council for the Study of Community Colleges, April, 2011, New Orleans, Louisiana.

- *Factors that Shape Faculty Curricular Reasoning: An Analytical Framework and Example Study*. Paper presented at the annual conference for the Association for the Study of Higher Education, November, 2009, Vancouver, Canada.

- *Factors that Shape Community College Mathematics Faculty Members' Curricular Reasoning About College Algebra Reform: A Multiple Case Study.* Paper presented at the Joint Mathematics Meeting, January, 2008, San Diego, California.

- *The Influence of Workforce Needs on Community College Mathematics Faculty Members' Reasoning about College Algebra Reform.* Paper presented at the Annual Conference of the Association for the Study of Higher and Postsecondary Education, November, 2007, Louisville,

Kentucky, and at the annual conference of the Council for the Study of Community Colleges, April, 2007, Tampa, Florida.

- *NCES Research on College Participation: Analysis of Model Fit and Model Respecification*. Paper presented at the annual conference for the Association for the Study of Higher Education, November, 2005, Philadelphia, Pennsylvania.

- *What Do They Assume? An Exploration of the Assumptions about Student Learning Contained in Calls for Reform of Introductory College Mathematics Courses.* Paper presented at the Joint Mathematics Meeting, January, 2005, Atlanta, Georgia.

- *Losing Face? The Importance of Seeing the Lecturer in a Multimedia Presentation.* Paper presented at the annual conference for the Association for the Study of Higher Education, November, 2004, Kansas City, Missouri.

- *Teaching Practices and Student Orientation of Mathematics Education Faculty: A Comparison with Mathematics and Education Faculty and Implications for Practice.* Paper to be presented at the annual conference for the Association for the Study of Higher Education, November, 2003, Portland, Oregon.

ADDITIONAL PRESENTATIONS

- *The Gender Variable in Statistics.* Ignite Presentation at the annual conference for the 2017 American Mathematical Association of Two-Year Colleges, San Diego, and the 2015 California Mathematics Council Community Colleges 2015 Annual Conference, Anaheim, California.

- *Features and Practices of Successful Calculus Programs: Insights from Case Studies at Seventeen Institutions*. Presentation at the Association of American Colleges and Universities Network for Academic Renew Conference: Transforming STEM Education, October, 2013, San Diego, California.

- *Supporting STEM Student Success through Embedded Remediation with The Math You Need, When You Need It.* Presentation at the Association of American Colleges and Universities Network for Academic Renew Conference: Transforming STEM Education, October, 2013, San Diego, California.

- *Strategies that Engage Adjunct Faculty in Developmental Math Reform*. Presentation at the annual conference of the American Mathematical Association of Two-Year Colleges, October, 2013, Anaheim, California.

- *Supporting and Engaging Adjunct Faculty.* Presentation at the Washington State Community College Mathematics Conference, May, 2013, Bellingham, Washington.

- *Visualizing Persistence to College-Level Math: A faculty-IR collaboration.* Presentation at the annual conference of the Association for Institutional Research, June, 2012, New Orleans, Louisiana.

- *Veterans' Math Boot Camp.* Presentation at the Washington State Community College Mathematics Conference, May, 2012, Wenatchee, Washington.

- *A Twofer: Pre-College Redesign at Edmonds and Highline.* Presentation with Chris Eaton *at* the Washington State Community College Mathematics Conference, May, 2012, Wenatchee, Washington.

- *The Elephant in the [Class] Room: Involving Part-time Faculty in Improving Community College Developmental Mathematics.* Presentation at the annual conference of the Association of Mathematicians at Two-Year Colleges [AMATYC], November, 2011, Austin, Texas.

- *Change 101*. Presentation at the Washington State Community College Mathematics Conference, May, 2011, Skamania, Washington.

- *Alternative Intermediate Algebra in Washington: Why, Where, and How?* Presentation at Everett Community College, December, 2010, Everett, Washington.

- *Fostering Student Attributes: Results from Highline College's SAMS grant.* Presentation at the Washington State Community College Mathematics Conference, May, 2010, Yakima, Washington.

- *Mathematics Faculty Members' Curricular Reasoning about College Algebra Reform,* Presentation at the Maseeh Mathematics and Statistics Colloquium Series, January, 2010, Portland State University, Portland, Washington.

- *Student Achievement Database: Exploring Precollege Mathematics Achievement.* Webinar for the Washington State Board of Community and Technical Colleges, October, 2009.

- *Third-year of Math: How Relevant is Algebra II for All Student?* Presentation to the Washington State Board of Education, January, 2008, Tumwater, Washington.

- *Effective Collaborations for Course Redesign.* Presentation at the International Conference of Women Engineers and Scientists [ICWES], August, 2005, Seoul, Korea.

- *Conceptualizing Mathematical Proficiency*. Presentation at the Washington State Community College Mathematics Conference, May, 2004.

- *Innovations in Mathematics at Highline College.* Presentation to the Washington State Community College Instruction Commission, May, 2003, Cascadia Community College, Bothell, Washington.

- *Disciplinary Specialization: What is it and Why Does it Matter?* Presentation to the Washington State Community College Mathematics Conference, May 2003.

- *Math 95: Research and Findings.* Presentation at the Washington State Community College Mathematics Conference, April 2001.

- *The Platonist: Mathematician or Mystic.* Presentation at the annual conference of the National Council of Teachers of Mathematics, February 2000 and at the Washington State Community College Mathematics Conference, April 1999.

- *Relations and Functions: What's a Nice Variable Like You Doing in a Place Like This?* Poster presented of student and faculty co-authored paper produced during a coordinated studies program, International Conference on the Learning Sciences, 1998.

- *The Axiom of Choice.* Presentation at the Washington State Community College Mathematics Conference, April 1997.

HONORS

Washington State Two-Year College Mathematics Education Reform Award, 2014
Recipient of Spencer Fellowship for doctoral study, fall 2002-summer 2006.