

Christopher Quarles

PhD Student, Information

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STRENGTHS & SKILLS

- Broad range of mathematical, statistical, and data-mining techniques
- Strong statistical computing skills using R
- Experience with a variety of statistical and mathematical programming software including python, Maple, Mathematica, and NetLogo
- Broad background and ability to combine multiple disciplines
- Working effectively with people from a variety of backgrounds and economic circumstances
- Computational social science
- Education research
- Communicating complex topics effectively with diverse audiences
- Experimental design
- Significant experience as an educator
- Mentoring
- Curriculum design & authoring
- Institutional leadership
- Mathematical & statistical modeling

EDUCATION

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|---|--------------------------|------|
| PhD, Information (in progress) | University of Michigan | 2021 |
| Master of Science, Mathematics | University of Washington | 2005 |
| Dissertation: "Krull-Schmidt Rings & Noncommutative Resolutions of Singularities" | | |
| Master of Science, Mathematics | University of Illinois | 2000 |
| Bachelor of Science, Physics | University of Illinois | 1999 |

SELECTED WORK EXPERIENCE

Professor of Mathematics Everett Community College 2008 – 2016

Taught adult students with a variety of needs, mathematical skill levels, and socio-economic backgrounds. Classes taught range from basic arithmetic to statistics to differential equations. Mentored new faculty. Performed a variety of duties related to department and college governance. Served on over 20 college committees and chaired 8 of those. Helped design a college-wide learning outcome in sustainability. Advocated for and supported the teaching of math in a variety of interdisciplinary contexts.

Math Department Chair Everett Community College 2014 – 2015

Responsible for hiring, scheduling, running meetings, and general leadership. Supported faculty in their goals of providing quality instruction, leadership, and innovation, especially associate faculty. Organized Faculty Learning Communities to facilitate collaboration between professors.

Associate Professor of Mathematics Shoreline Community College 2005 – 2008
Taught classes from Pre-Algebra through Calculus. Created curriculum, technology-based classroom projects, and other support material for my classes.

**Interim Director,
Math Learning Center** Shoreline Community College 2006
Supervised staff of 20 employees. Managed budget. Trained and mentored tutors.

Teaching Assistant – Math University of Washington 2000 – 2005
Taught and was a TA for a variety of classes including College Algebra, Precalculus, Calculus, Business Math, Math for Liberal Arts, Calculus for the Life Sciences, and Differential Equations.

GRANTS & FELLOWSHIPS

College Spark Community Research Grant 2014 – 2016
“How student learning impacts student success in mathematics”

Advanced Technology Environmental & Energy Center Fellowship 2009
Designed high school math & science curriculum around wind energy

GK-12 Fellowship University of Washington 2003 – 2004
Worked with elementary school teachers & children at a low income school. Assisted in lesson development and classroom teaching around inquiry-based lessons. Created and implemented original instructional material.

PUBLICATIONS

Kaikkonen, D. A. & Quarles, C. L. The effect on earnings of the applied baccalaureate degree. *Community College Review*. 46(4), 347-367. doi: 10.1177/0091552118782619.

Quarles, C. L. & Davis, M. (2017). Is learning in developmental math associated with community college outcomes? *Community College Review*. 45(1), 33-51. doi: 10.1177/0091552116673711.

Charles A. Dana Center at the University of Texas at Austin. (2015). *Statistical Reasoning* (2nd ed.). Austin, TX: Pearson.

CURRENT RESEARCH PROJECTS

The Effects of Racial Salience on Avoidance and Civility in Social Media

This social media experiment examines how priming social identity affects behavioral responses on Reddit. Led project. Co-designed the study and experimental design. Created and ran a survey on Amazon Mechanical Turk. Analyzed data. Wrote python code to interact with Reddit API.

Community College Student Outcomes, Human Capital, and Entropy

Analysis of student credit distributions using information-theoretic techniques to understand relationships between macro-level socioeconomic factors and educational outcomes. Designed and led the study. Created a theoretical framework using energy & entropy to describe student progress. Worked with a state agency to acquire a data set of 240,000 students. Analyzed distributions using maximum likelihood, empirical cumulative distribution functions, and QQ plots.

EQUITY & STUDENT SUCCESS

Project Lead, Digital Navigator Everett Community College 2015 – 2016
Led development and design of interactive, customized website designed to help new and first-generation students navigate college procedures.

Gifted Advisory Committee Edmonds School District 2014 – 2016
Worked with issues of equity in the district’s gifted program.

Achieving the Dream Co-Lead Everett Community College 2011 – 2015
Led college-wide student success efforts involving a \$250,000 grant. Advocated for and supported the use of data & evidence at the college. Designed the structure of the program. Co-chaired leadership committee. Wrote parts of grant proposal and evaluation. Chaired a committee which awarded research grants for faculty & staff, and provided research support. Led a team which oversaw and evaluated Supplemental Instruction in developmental math classes. Performed some duties of college’s research director during a transition period. Worked with the national organization and colleagues from around the country. Helped coordinate a statewide meeting of Achieving the Dream colleges. Because of our work, EvCC received national recognition as a “Leader College”.

Math Olympiad Coordinator Leschi Elementary School 2004
Organized school’s first team for this regional competition. Coordinated with teachers, students, parents, volunteers and staff. Helped design program of study. Helped children learn.

MATH EDUCATION REFORM

Teacher & Curriculum Support
New Mathways Project Charles A. Dana Center at UT-Austin 2016
Supported teachers in classroom practice. Performed quality control during the launch of NMP on a new online platform.

Author, *Statistical Reasoning*

New Mathways Project Charles A. Dana Center at UT-Austin 2014
Co-wrote Version 2.0 of this statistics curriculum, which is used in over 50 colleges around the U.S. The curriculum focuses on interdisciplinary contexts, active learning, constructive perseverance, and problem solving.

Rethinking Precollege Math Everett Community College 2009 – 2012
Member of the leadership team in grant-funded education reform project. Designed organizational structure of the college's work. Led a team which developed a contextualized, active-learning algebra course. Created original, active-learning curriculum. Actively participated in the restructure of the math curriculum. Spearheaded data collection and analysis of the program's effectiveness.

Curriculum Development

Sustainable Business & Math Everett Community College 2010
Worked with a colleague in the business department to develop joint curriculum for algebra & sustainable business classes. Attended retreat under the auspices of the Math Across the Community College Curriculum and the Curriculum for the Bioregion projects.

Transition Math Project Shoreline Community College 2006
Successfully advocated for and participated in this high school/college partnership grant.

PRESENTATIONS

"Community College Student Success & Directed Human Capital"
University of Michigan Information Analysis & Retrieval Seminar 2018

"Conceptual Understanding in a World of Complexity"
Northwest Two-Year College Mathematics Conference 2016

"Investigating Learning and Success: Innovating in college remediation"
National Council of Teachers of Mathematics Research Conference, with Mickey Davis 2016

"The Dimensions of Student Success"
Achieving the Dream Conference on Student Success 2016

"Learning from Research on Learning"
American Mathematical Association of Two-Year Colleges, with Mickey Davis 2015

"A Research Approach to Learning & Student Success"
Washington Community College Math Conference 2015

"Mystery Theater: The Case of the Asphyxiated Algebra Class"
Achieving the Dream Conference on Student Success, with Al Friedman 2014
Also at Washington Community College Math Conference 2014

"Using Classroom Level Data to Improve Student Learning"
Everett Community College Opening Week 2012

Curriculum Vitae

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| "Math in Context" | Snohomish County High School Summer Math Institute | 2011 |
| "Data-Based Decision Making for the Lazy Educator" | Joint WAMATYC/ORMATYC Conference | 2011 |
| "Greening Your Class" | Everett Community College All-Campus Retreat | 2010 |

AWARDS & MEDIA COVERAGE

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| Service Award | WA Mathematical Association of Two Year Colleges | 2017 |
| Media Coverage - Seattle Times | [link] | December 2016 |
| | "New study by Everett instructor shows value of real-world context in teaching algebra" | |
| Inspirational Teacher Award | Univ. Washington - Computer Science & Engineering | 2016 |
| Extra Effort Award | Everett Community College | 2012 |

CONTINUING EDUCATION

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| Machine Learning | Coursera (Stanford) | 2016 |
| Agent-based Modeling | Complexity Explorer (Santa Fe Institute) | 2016 |
| Bayesian Statistics | Coursera (Duke) | 2016 |
| Introduction to Information Theory | Complexity Explorer (Santa Fe Institute) | 2015 |
| Maximum Entropy Methods | Complexity Explorer (Santa Fe Institute) | 2015 |
| Online Education Planning & Pedagogy | Everett Community College | 2015 |
| Introduction to Complexity | Complexity Explorer (Santa Fe Institute) | 2014 |
| Computing for Data Analysis (using R) | Coursera (Johns Hopkins University) | 2014 |
| Workplace Communications | Everett Community College | 2012 |
| Focus Group Facilitation Workshop | Achieving the Dream | 2011 |

ADDITIONAL ACTIVITIES

Statistics & R Support, Proteomics University of Washington 2016
 Helped a pathology laboratory with R code used to analyze peptide and protein abundancies in biological samples.

Founded Statewide Math Awards Washington 2014
 Created this set of awards to recognize excellence among Washington community college math teachers. Awards are presented at an annual conference by the Washington Mathematical Association of Two-Year Colleges.

Lab Assistant – Physics University of Illinois 1999
 Helped assemble ATLAS detector components for the Large Hadron Collider at CERN.