

CURRICULUM VITAE

Kyunghee Moon
Professor of Mathematics
Department of Computing and Mathematics
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EDUCATION

Ph.D. in Mathematics Education, University of California, Santa Barbara, CA

Ph.D. in Mathematics, University of Southern California, Los Angeles, CA

ACADEMIC APPOINTMENT

Professor (2023-), Department of Computing and Mathematics, University of West Georgia, GA

Associate Professor (2017-2023), Department of Computing and Mathematics, University of West Georgia, GA

Assistant Professor (2011-2017), Department of Computing and Mathematics, University of West Georgia, GA

TEACHING

Courses Taught at UWG

Math 1001: Quantitative Skills and Reasoning

Math 1113: Precalculus

Math 1413: Survey of Calculus

Math 1634: Calculus I

Math 2008: Foundations of Numbers and Operations for P-8 Teachers

Math 3703: Geometry for P-8 Teachers

Math 3803: Algebra for P-8 Teachers

Math 4713: Probability and Statistics for P-8 Teachers

Math 6743: Advanced Perspective on Secondary Mathematics

PROFESSIONAL DEVELOPMENT

Peer Reviewed Publications in Journals or Proceedings

- Moon, K. (2023). Developing knowledge of student thinking: Understanding big ideas behind students' difficulties with connecting representations in algebra. *International Journal for Mathematics Teaching and Learning*, 24(1), 1-16.
- Moon, K. (2023). A Precalculus student's use of slope in finding linear equations and linear approximations. *Proceedings of the 26th Annual Conference on Research in Undergraduate Mathematics Education*, Omaha, NE.
- Moon, K. (2020). New approaches for two-variable inequality graphs utilizing the Cartesian Connection and the APOS theory. *Educational Studies in Mathematics*, 104(3), 351-367.
- Moon, K. (2019). Preservice teachers' understanding of two-variable inequalities: APOS Theory. Otten, S., Candela, A. G., de Araujo, Z., Haines, C., & Munter, C, *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 686-694). St Louis, MO: University of Missouri.
- Moon, K. (2019). Preservice Teachers' Content Knowledge and Technological Content Knowledge on Rational Functions. In K. Graziano (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 2177-2181). Las Vegas, NV, United States: Association for the Advancement of Computing in Education (AACE).
- Moon, K. (2019). Graphs of two variable inequalities: Alternate approaches to the solution test. *The Mathematics Enthusiast*, 16(1), 107-126.
- Moon, K. (2017). Preservice secondary teachers' abilities to transfer from graphical to algebraic representations of functions. In (Eds.) A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, and S. Brown, *Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education* (pp 763-770), San Diego, California.
- Moon, K. (2017). Preservice secondary teachers' abilities to use representations and realistic tasks. In (Eds.) A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, and S. Brown, *Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 771-778), San Diego, California.
- Moon, K. (2016). Graphs of inequalities in two variables. In T. Fukawa-Connelly, N. Infante, M. Wawro, and S. Brown, *Proceedings of the 19th Annual Conference on Research in Undergraduate Mathematics* (pp. 1133-1140, Pittsburgh, Pennsylvania.
- Moon, K. (2014). Preservice secondary teachers' understanding of the Cartesian Connection and equivalence. In T. Fukawa-Connelly, G. Karakok, K. Keene, & M. Zandieh (Eds.), *Proceedings of the 17th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 916-925), Denver, Colorado.
- Moon, K., Brenner, M. E., Jacob, B., & Okamoto, Y. (2013). Prospective secondary mathematics teachers' understanding and cognitive difficulties in making

- connections among representations. *Mathematical Thinking and Learning*, 15(3), 201-227.
- Moon, K., Brenner, M. E., Jacob, B., & Okamoto, Y. (2012). Cognitive obstacles and mathematical ideas related to making connections among representations. In L. R. Van Zoest et al. (Eds.), *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 645-651), Kalamazoo, MI.
- Hough, S., Jacob, B., Moon, K., Guzman, M., & Lager, C. (2010). Measuring the differences in prospective elementary teachers' and secondary teachers' early pedagogical content knowledge using video cases. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2010* (pp. 3456-3467). Chesapeake, VA: AACE.
- Estes, D., & Moon, K. (1998). Form class groups over number fields. *Proceedings of International Conference on Integral quadratic forms and lattices*, AMS Providence, Seoul, S. Korea.

Dissertations

- Moon, K. (2013). *Preservice secondary mathematics teachers' development of mathematical knowledge for teaching and their use of knowledge in their instruction* (Ph.D. Dissertation under Dr. Mary Brenner).
- Moon, K. (1996). *Gauss class groups* (Ph.D. Dissertation under the late Dr. Dennis Estes).

Presentations (National or International)

- Moon, K. (2023). A precalculus student's use of slope in finding linear equations and linear approximations. *The 26th Annual Conference on Research in Undergraduate Mathematics Education*, Omaha, NE.
- Moon, K. (2021). A Unit on prime numbers and relevant ideas for preservice elementary teachers. *Association of Mathematics Teacher Educators (AMTE) Conference*. Virtual Conference.
- Moon, K. (2019). Preservice teachers' understanding of two-variable inequalities: APOS Theory. The forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St Louis, MO.
- Moon, K. (2019). Preservice teachers' content knowledge and technological content knowledge on rational functions. Society for Information Technology & Teacher Education International Conference, Las Vegas, NV.
- Moon, K., Jacob, B. (2018). Developing knowledge of student thinking: Understanding the big ideas behind students' difficulties with connecting representations. Paper presented at the 2014 Annual Meeting of the American Educational Research Association.

- Moon, K. (2017). Preservice secondary teachers' abilities to transfer from graphical to algebraic representations of functions. The 20th Annual Conference on Research in Undergraduate Mathematics Education, San Diego, California.
- Moon, K. (2017). Preservice secondary teachers' abilities to use representations and realistic tasks. The 20th Annual Conference on Research in Undergraduate Mathematics Education, San Diego, California.
- Moon, K. (2016). Graphs of inequalities in two variables. The 19th Annual Conference on Research in Undergraduate Mathematics Education, Pittsburgh, Pennsylvania.
- Moon, K. (2015). Unraveling big ideas associated with difficulties in connecting representations. The 2015 Joint Mathematics Meetings, San Antonio, Texas.
- Moon, K. (2014). Preservice secondary teachers' understanding of the Cartesian Connection and equivalence. The 17th Annual Conference on Research in Undergraduate Mathematics Education, Denver, CO.
- Hough, S., Mendoza, M., Jacob, B., Moon, K. (2014). The development of prospective elementary teachers' early pedagogical content knowledge. Paper presented at the 2014 Annual Meeting of the American Educational Research Association.
- Moon, K., Brenner, M. E., Jacob, B., & Okamoto, Y. (2012). Cognitive obstacles and mathematical ideas related to making connections among representations. The 34th Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education, Kalamazoo, MI.
- Moon, K. (2012). Prospective secondary mathematics teachers' mathematical ideas and cognitive difficulties in relation to making connections among representations. MAA PREP IBL Workshop, Santa Barbara, CA.
- Moon, K. (2011). Are models tools for understanding or algorithms to memorize? Association of Mathematics Teacher Educators (AMTE) Conference, Irvine, CA.
- Moon, K. (2008). STEM undergraduates' conceptual understanding of division and part-whole relation. *California Mathematics Council North Conference*, Asilomar, CA.
- Jacob, B., Lager, C., & Moon, K. (2008). NSF course, curriculum and laboratory improvement (CCLI) grant. *Educational Advancement Foundation Conference*, Austin, TX.
- Moon, K. (1997). On class groups. *Korean Mathematical Association Conference*, Seoul, S. Korea.

External Grant (Awarded)

- Moon, K. (PI, Years 2014-2015, \$12,550). Unraveling Big Ideas Associated with Difficulties in Connecting Representations. The Spencer Foundation.

External Grant (Unfunded)

Moon, K. (PI, 2021-2024, \$299,278). Connecting Representations of Equations and Inequalities through the Big Ideas of the Cartesian Connection and Variation: the APOS Theory. National Science Foundation.

UWG Grant (Awarded)

Moon, K. (PI, 2021-2022, \$4,971). Connecting Representations of Equations and Inequalities through the Big Ideas of the Cartesian Connection and Variation: the APOS Theory. Faculty Research Grant.

Editorial Work

Associate Editor for *The Mathematics Enthusiast* (July, 2022-Present)

Guest Editor for a Special Issue of *The Mathematics Enthusiast*: In preparation for publication in spring 2024 (May 2022-Present)

Reviewer

Educational Studies in Mathematics

Mathematical Thinking and Learning

PME-NA

Mathematics Teacher Education and Development

Research for Undergraduate Mathematics Education

Professional Memberships

National Council of Teachers of Mathematics (NCTM)

Association of Mathematics Teacher Educators (AMTE)

Special Interest Group of the MAA on Research in Undergraduate Mathematics Education (RUME)

Mathematics Association of America

American Educational Research Association (AERA)