

Patrick R. McGuire

University of Colorado
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EDUCATION:

University of Virginia, Charlottesville, VA

Ph.D. Instructional Technology

August, 2010

Dissertation: Supporting High Quality Teacher-Child Interactions in Pre-K Mathematics

Chair: Mable Kinzie

Duquesne University, Pittsburgh, PA

M.S. Instructional Technology

August, 2006

B.S. Secondary Education, Cum Laude

December, 2004

B.A. Mathematics, Cum Laude

December, 2004

PROFESSIONAL EXPERIENCE:

University of Colorado at Colorado Springs, Colorado Springs, CO

2010-Present

- Assistant Professor, Department of Curriculum and Instruction

Worcester Polytechnic Institute, Worcester, MA

2008-2010

- Research Assistant, Department of Computer Science
- Project: ASSISTments (Secondary math intelligent tutoring system)

University of Virginia, Charlottesville, VA

2007-2010

- Graduate Research Assistant, Curry School of Education
- Project: MyTeaching Partner Math-Science (Pre-K curricula)

Carnegie Mellon University, Pittsburgh, PA

2006-2008

- Research Assistant, Human-Computer Interaction Institute
- Project: ASSISTments (Secondary math intelligent tutoring system)

Bethel Park Senior High School, Bethel Park, PA

2005-2007

- High School Mathematics Teacher (Algebra and Geometry)

North Hills Junior High School, Pittsburgh, PA

Fall, 2004

- Junior High School Mathematics Student Teacher

REFEREED PUBLICATIONS:

Journal Articles:

1. **McGuire, P.**, Kinzie, M.B., & Berch, D.B. (2011). Developing number sense in pre-k using five-frames. *Early Childhood Education Journal*. (average acceptance rate = 11-20%).
2. Wang, F., Kinzie, M., **McGuire, P.**, & Pan, E. (2009). Applying technology to problem-based inquiry learning in early childhood education. *Early Childhood Education Journal*, 37, 381-389. (average acceptance rate = 11-20%).

Manuscripts Under Review:

1. **McGuire, P.**, & Berry, R.Q. (Submitted in April, 2011). Supporting pre-service elementary teachers' pedagogical content knowledge in math using intelligent tutoring software. Under review by the *Journal of Computing in Higher Education*. (average acceptance rate = 21-30%)
2. Kinzie, M.B., Whittaker, J.V., **McGuire, P.**, Lee, Y., & Kilday, C.R. (Submitted in February, 2011). Pre-kindergarten mathematics & science: Design-based research on curricular development. Under review for publication in the *Journal of Educational Technology Research and Development*. (average acceptance rate = 0-10%).
3. **McGuire, P.**, Kinzie, M.B., Thunder, K., & Berry, R.Q. (Submitted in October, 2010). Methods of analysis and overall teaching quality in pre-k mathematics. Under review for publication in the *Journal for Research in Mathematics Education*. (average acceptance rate = 0-10%)
4. **McGuire, P.**, & Kinzie, M.B. (Submitted in October, 2010). Scaffolding foundational two-digit place value understanding in pre-k mathematics. Under review for publication in the *Journal of Mathematical Behavior*. (average acceptance rate = 11-20%)

Manuscripts in Progress:

1. **McGuire, P.** (in progress). Flipping the secondary mathematics classroom using open-source technology: A practical guide to using ASSISTments and Khan Academy. To be submitted to the *Colorado Mathematics Teacher*. (average acceptance rate = ?? - ??%)
2. **McGuire, P.**, Kinzie, M.B., Lee, Y., & Matthew, K., Foss, J. (in progress). A blended-learning approach to professional development in pre-k math and science: Lessons from *MyTeachingPartner Math-Science*. To be submitted to the *Journal of Early Childhood Teacher Education*. (average acceptance rate = 21-30%)
3. **McGuire, P.**, Kinzie, M.B., Kilday, C.R., & Whittaker, J.E. (in progress). Pre-k children's earliest conceptions of place value: A place for place value in pre-k mathematics instruction. Under review by the *Journal for Research in Mathematics Education*. (average acceptance rate = 0-10%)

NON-REFEREED PUBLICATIONS:

Technical Report:

1. Hamre, B., Downer, J., Kilday, C.R., & **McGuire, P.** (2009). Effective teaching practices for early childhood mathematics. Report submitted to the National Research Council (NRC). In *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: The National Academies Press.

BOOKS AND BOOK CHAPTERS:

Book Chapter:

1. **McGuire, P.**, & Wiggins, A. K. (2009). Mathematical reasoning and number sense. In E. D. Hirsch & A. K. Wiggins (Eds.). *Preschool sequence and teacher handbook* (pp. 171-218). Charlottesville, VA: Core Knowledge Foundation.

PRESENTATIONS:

Refereed Conferences:

1. Kelly, C.A. & **McGuire, P.** (2011, accepted). Developing Number Sense in Pre-K with Five-Frames and Ten-Frames. Presentation at the National Council of Teachers of Mathematics (NCTM) Regional Conference. Albuquerque, NM.
2. Kelly, C.A., **McGuire, P.**, Fritz, T., & Pescek, P. (2011, accepted). Program Size Does Matter: Implementing the U-Teach program at a small-scale university. Presentation at the School Science and Mathematics Association (SSMA) annual convention. Colorado Springs, CO.
3. Kroeschen, K., & **McGuire, P.** (2011, accepted). Using ASSISTments to assess middle school math students' HW understanding. Paper presentation at the School Science and Mathematics Association (SSMA) annual convention. Colorado Springs, CO.
4. **McGuire, P.** (2011, accepted). Supporting secondary math and science instruction with intelligent tutoring software. Paper presentation at the School Science and Mathematics Association (SSMA) annual convention. Colorado Springs, CO.
5. **McGuire, P.**, & Weathers, J. (2011, accepted). Supporting cognitively guided formative assessment techniques in elementary mathematics. Paper presentation at the School Science and Mathematics Association (SSMA) annual convention. Colorado Springs, CO.
6. **McGuire, P.** (2011). Formative assessment made easy with intelligent tutoring software. Hands-on technology workshop presented at the Colorado Learning and Teaching with

Technology Conference (COLTT). University of Colorado. Boulder, CO.

7. Kelly, C.A., **McGuire, P.**, Fisher, C., & Weeres, Y. (2011). Developing and implementing a large-scale replication at a small-scale university. Paper presentation at the UTeach Institute National Math and Science Initiative Conference. University of Texas. Austin, TX.
8. **McGuire, P.**, & Kinzie, M.B. (2011). An analysis of teacher-child interactions in pre-k mathematics. Paper presentation at the annual meeting of American Educational Research Association (AERA). New Orleans, LA.
9. Kinzie, M.B., Whittaker, J. E., Williford, A., **McGuire, P.**, Lee, Y., & Matthew, K. (2011). *MyTeachingPartner-Math/Science* pre-kindergarten curricula and teacher supports: A preliminary report of effects. Paper presentation at the annual meeting of American Educational Research Association (AERA). New Orleans, LA.
10. Matthew, K., **McGuire, P.**, Kinzie, M.B., Lee, Y., & Foss, J. (2010). A blended-learning approach to professional development in pre-k mathematics and science: Lessons from *MyTeachingPartner*. Reflection paper presentation at the annual meeting of the Association for Educational Communications and Technology (AECT). Anaheim, CA.
11. **McGuire, P.**, Berry, R.Q., Heffernan, N., & Heffernan, C. (2010). Leveraging open-source technology to improve pre-service teachers' pedagogical content knowledge in mathematics. Poster presentation at the annual meeting of the Association for Educational Communications and Technology (AECT). Anaheim, CA.
12. Kinzie, M.B., Whittaker, J.E., **McGuire, P.**, & Lee, Y. (2010). Pre-kindergarten mathematics & science: Design-based research on curricular development. Design and development showcase at the annual meeting of the Association for Educational Communications and Technology (AECT). Anaheim, CA.
13. Kinzie, M. B., Whittaker, J.E., Kilday, C.R., Pianta, R.C., **McGuire, P.**, Pan, E., Foss, J., Lee, Y., Hughes, M. M., Josephson, K., Williford, A., Berry, R.Q., Thomas, K., & Kelly, C. (2010). *MyTeachingPartner Mathematics-Science: Year 2 pilot outcomes*. Poster presented at the annual meeting of the Institute of Education Sciences (IES). Washington, D.C.
14. Lee, Y., Choi, J., & **McGuire, P.** (2010). A review of online dropout and suggestions for future research. Paper presented at the annual meeting of the International Society for Technology in Education (ISTE). Denver, CO.
15. **McGuire, P.**, Kinzie, M.B., Kilday, C.R., & Whittaker, J.E. (2010). Children's understanding of two-digit place value: A place for place value in pre-k mathematics instruction. Roundtable paper presented at the annual meeting of the American Educational Research Association (AERA). Denver, CO.
16. Kinzie, M.B., Pianta, R.C., Berry, R.Q., Foss, J., Williford, A., Kilday, C.R., Pan, E., Hughes, M.M., Josephson, K., Pinkham, A., **McGuire, P.**, & Lee, Y. (2009). Pre-

kindergarten math & science, year two: Development of curricula & teacher supports. Poster presented at the annual meeting of the Institute of Education Sciences (IES). Washington, D.C.

17. Kinzie, M.B., Pianta, R.C., Kilday, C.R., **McGuire, P.**, & Pinkham, A. (2009). Development of curricula, teacher supports, and assessments for pre-kindergarten mathematics and science. Paper presented at the biennial meeting of the Society for Research on Educational Effectiveness (SREE). Washington, DC.
18. Kilday, C.R., Kinzie, M.B., & **McGuire, P.** (2009). An examination of the quality of mathematics and science instruction in pre-k classrooms. Poster presented at the biennial meeting of the Society for Research in Child Development (SRCD). Denver, CO.
19. Kinzie, M.B., Pianta, R.C., Berry, R.Q., Wang, F., Hughes, M.M., Kilday, C.R., Pan, E., **McGuire, P.**, & Josephson, K. (2008). Year one: Development of integrated pre-kindergarten curricula. Poster presented at the annual meeting of the Institute of Education Sciences (IES). Washington, DC.
20. Wang, F., Kinzie, M., **McGuire, P.** & Pan, E. (2008). Technology-enhanced, problem-based inquiry learning in early childhood education: A theoretical basis. In K. McFerrin et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2008* (pp. 2266-2271). Chesapeake, VA: AACE.
21. **McGuire, P.**, Kinzie, M., Pan, E. & Lee, Y. (2008). Effective use of interactive story-based mathematics activities at the pre-k level. In K. McFerrin et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2008* (pp. 2118-2123). Chesapeake, VA: AACE.
22. Pan, E., Kinzie, M. & **McGuire, P.** (2008). Design of a web-based curriculum development & delivery system: Lessons from *MyTeachingPartner-Mathematics & Science*. In K. McFerrin et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2008* (pp. 3118-3122). Chesapeake, VA: AACE.

Submitted Proposals:

1. Kelly, C.A., **McGuire, P.**, Fritz, T., & Pescek, P. (submitted August, 2011). UCCS teach program: An exemplary secondary mathematics and science teacher preparation program. Proposal submitted to the Colorado Teachers of Mathematics (CCTM). Denver, CO.
2. Kelly, C.A. & **McGuire, P.** (submitted August, 2011). Putting it all together: How the brain filters mathematical information. Proposal submitted to the Colorado Teachers of Mathematics (CCTM). Denver, CO.
3. **McGuire, P.** (submitted June, 2011). ASSISTments: Classroom clickers on steroids. Proposal submitted to the Colorado Council of Teachers of Mathematics (CCTM). Denver, CO.

Invited Presentations (Non-refereed):

1. **McGuire, P.** (December 2011). *Developing Measurement Understanding in Pre-K Mathematics: Support for Teachers, Students, and Principals*. Teacher professional development workshop series delivered to 100 pre-kindergarten teachers in Pueblo City Schools, Pueblo, CO.
2. **McGuire, P.** (October, 2011). *Developing Geometric Understanding in Pre-K Mathematics: Support for Teachers, Students, and Principals*. Teacher professional development workshop series delivered to 100 pre-kindergarten teachers in Pueblo City Schools, Pueblo, CO.
3. **McGuire, P.** (September, 2011). *Developing Number Sense Understanding in Pre-K Mathematics: Support for Teachers, Students, and Principals*. Teacher professional development workshop series delivered to 100 pre-kindergarten teachers in Pueblo City Schools, Pueblo, CO.
4. **McGuire, P., & Weathers, J.** (April, 2011). *Cognitively Guided Instruction Part Two*. Teacher professional development workshop series delivered to 120 first and second grade teachers in Pueblo City Schools, Pueblo, CO.
5. **McGuire, P., & Weathers, J.** (February, 2011). *Introduction to Cognitively Guided Instruction*. Teacher professional development workshop series delivered to 120 first and second grade teachers in Pueblo City Schools, Pueblo, CO.
6. **McGuire, P. & Weathers, J.** (January, 2011). *Introduction to Mathematics Misconceptions and Formative Assessment*. Teacher professional development workshop series delivered to 120 first and second grade teachers in Pueblo City Schools, Pueblo, CO.
7. Kinzie, M.B., **McGuire, P.**, Pan, E. (December, 2009). *Meeting the need in pre-kindergarten mathematics & science via design-based research*. Presentation given at the Curry Tea and Technology Seminar. University of Virginia. Charlottesville, VA.

GRANTS:

Funded Grant Proposals:

1. **McGuire, P.** (June, 2011). *Teaching veteran teachers new tricks: 21st Century Technology Support for 20th Century Teachers*. (\$500). Curriculum grant in aging from the UCCS Gerontology Center. Principal Investigator.
2. **McGuire, P.** (September, 2011 – January 2012). *Supporting High Quality Mathematics Teaching and Learning in At-risk Pre-Kindergarten Classrooms*. (\$7,500). UCCS Research and Creative Works Grant. Principal Investigator.
3. Weathers, J. Gagliano, D., **McGuire, P.**, Pasztor, A., & Webb, D. (November 1, 2010-

December 31, 2011). *Uncovering and Addressing Student Misconceptions: Improving Elementary Teachers' Formative Assessment Capacity and Mathematics Pedagogical Content Knowledge*. (\$206,320). Colorado Department of Higher Education. Project Director.

4. **McGuire, P.** (November, 2010). *Audience Response System Software*. (\$500). UCCS Teaching Enhancement Grant. Principal Investigator.

Grant Proposals (Rejected):

1. Heffernan, N., Murray, N., Militello, M., Koedinger, K., Martin, W., Mason, C., Boothby, J., Perry, H., Stork, J., Heffernan, C., Feng, M., & **McGuire, P.** (Submitted October, 2010). *The Data ASSISTment Project: Using Web-Based Technologies to Support Maine Middle School Partnership Around Mathematics*. (\$11,795,277). The National Science Foundation. Senior Personnel.
2. Losiewicz, K., Chamillard, T., **McGuire, P.**, Wortman, D., & Stiles, D. (Submitted January, 2011). *Interactive Learning Institute*. (\$1,050,000). Department of Education. Co-Principal Investigator.

COURSES TAUGHT [UG = Undergraduate; G = Graduate; O = Online]:

University of Colorado at Colorado Springs

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| 1. TED 4920 (UG) – Secondary Math Methods | Fall, 2010, 2011 |
| 2. CURR 5170 (G) – Intro to Technology in Education | Fall, 2010 |
| 3. CURR 5171 (G) – K-12 Web-Based Educational Resources | Spring, 2011 |
| 4. CURR 5304 (G) – Mathematics and Cognition | Spring, 2011 |
| 5. CURR 5120 (G-O) – Instructional Technology Project | Summer, 2011 |
| 6. CURR 5172 (G-O) – Multimedia Development for K-12 Educators | Fall, 2011 |

AWARDS, RECOGNITIONS AND SCHOLARSHIPS:

University of Colorado, Colorado Springs:

1. National Science Foundation (NSF) Early Career Symposium Award 2011
 - One of nine early career faculty members invited to attend the Association for the Educational Communications and Technology (AECT) Conference in Jacksonville, FL. All conference and travel expenses paid.

University of Virginia:

1. Educational Leadership and Foundations Program Graduate Fellow 2007-2010
2. AECT Outstanding Instructional Design Practice Award 2010
 - Designed mathematics curricula and online teacher supports for

MyTeachingPartner Math-Science, project director: Mable Kinzie)

Bethel Park High School

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|---|------|
| 1. Bethel Park School District Teacher Excellence Nominee | 2007 |
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Duquesne University:

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| 1. Dean's Teaching Fellow. Awarded to the top 5% of all student teachers | 2005 |
| 2. Atlantic 10 Commissioner's Cup Honor Roll | 2000-2005 |
| 3. Cross-Country Scholarship | 2000-2005 |
| 4. Pennsylvania Higher Education Assistance Agency SciTech Scholarship | 2002-2004 |
| 5. President's Academic Merit Scholarship | 2000-2004 |
| 6. Provost Academic Merit Scholarship | 2000-2004 |

PROFESSIONAL ORGANIZATIONS & SERVICE:

Organizations:

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|---|--------------|
| 1. School Science and Mathematics Association (SSMA) | 2010-Present |
| 2. Association for Educational Communications and Technology (AECT) | 2010-Present |
| 3. International Society for Technology and Education (ISTE) | 2010-Present |
| 4. American Educational Research Association (AERA) | 2010-Present |
| 5. National Council for Teachers of Mathematics (NCTM) | 2005-2008 |

Service:

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| 1. AERA Conference Proposal Reviewer
• Division C, Section 7, Technology | Fall, 2011 |
| 2. UCCS Teach Research Consortium Representative | 2011-Present |
| 3. SSMA Local Planning Committee | Spring, 2011 |

National Board Memberships:

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| 1. SSMA Finance Committee | 2011-Present |
| 2. ASSISTments Advisory Board Member | 2010-Present |

UNIVERSITY SERVICE:

Campus Level:

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| 1. UCCS Online Task Force Committee | 2010-Present |
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College Level:

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| 1. UCCS Technology and Innovations Committee | 2010-Present |
| 2. UCCS Early Childhood Distributed Studies Program Committee | Fall, 2010 |
| 3. UCCS Teach Master Teacher Search Committee | Spring, 2011 |
| 4. UCCS Teach Master Teacher Search Committee | Fall, 2011 |

University Workshops & Presentations (Delivered):

1. **McGuire, P.** (2011). An exploration of the top free technology resources for K-12 teachers. Presentation delivered to UCCS Department of Curriculum and Instruction Faculty.
2. **McGuire, P.** (2011). Cognitively-based lesson planning and task analysis for secondary mathematics and science instruction. Workshop delivered to UCCS Teach master teachers and faculty.
3. **McGuire, P.** (2011). Developing a standardized, reliable, and comprehensive observational measure for UCCS Teach Observations. Workshop delivered to UCCS Teach master teachers and faculty.
4. **McGuire, P.** (2011). Improving the quality of UCSS Teach observations using the Classroom Assessment Scoring System (CLASS). Workshop delivered to UCCS Teach master teachers and faculty.
5. **McGuire, P.** (2010). Using technology to enhance your instruction: A three-phase educational technology model. Two-part workshop series delivered to UCCS student teaching candidates and College of Education Faculty.

Guest Lectures:

1. **McGuire, P.** (2011). CURR 5170 – Intro to Technology in Education – Professor Jessica McAllister. Emerging Technologies in K-12 Education. Lecture delivered to UCCS graduate students.
2. **McGuire, P.** (2011). UCCS Freshmen Seminar – Professor Laura Marshall. What is teaching quality? Introduction to the Classroom Assessment Scoring System (CLASS) model. Lecture delivered to UCCS pre-service teachers.
3. **McGuire, P.** (2010). TED 4940 – Secondary Social Studies Methods, Professor Nancy Latka. Supplementing Secondary Social Studies Instruction with Educational Technology. Lecture delivered to UCCS pre-service social studies teaching candidates.

New Course Development:

1. TED 4640 – Early Childhood Mathematics Methods (3 credits)
 - Designed course syllabus for the UCCS Distributed Studies Major in Early Childhood Program

New Website and Software Development:

1. UCCS College of Education iPad application (2011).
2. UCCS Teach website (2011). URL: <http://www.uccs.edu/~uccsteach/>

PROFESSIONAL DEVELOPMENT TRAININGS (ATTENDED):

1. UCCS Grant Writing Workshop. (2011). Four-day grant writing workshop hosted by the UCCS Office of Sponsored Research. Colorado Springs, CO.
2. UTeach Institute National Math and Science Initiative Conference (2011). Three-day conference devoted to strengthening secondary STEM teacher preparation. University of Texas. Austin, TX.
3. UTeach Classroom Interactions Workshop (2011). Two-day professional development training held at the University of Texas. Austin, TX.
4. UCCS Big Idea Workshop (2010). Professional development workshop offered to UCCS faculty to support diversity and inclusiveness in the classroom. Colorado Springs, CO.

CONSULTING:

1. Pueblo City Schools (District 60): September, 2011 – June, 2012
 - Provide technical assistance, coaching support, and professional development services to early childhood teachers and principals based on CO state mathematics standards

PROFESSIONAL COLLABORATORS:

Neil Heffernan (Worcester Polytechnic University), Kenneth Koedinger (Carnegie Mellon University), Mable Kinzie (University of Virginia), Daniel Berch (University of Virginia), Robert Berry (University of Virginia), Glen Bull (University of Virginia), Alice Wiggins (Core Knowledge Foundation), Bridget Hamre (University of Virginia), John Weathers (University of Colorado at Colorado Springs), Daryl Gagliano (Pueblo City School District), Douglas Clements (SUNY Buffalo), Julie Sarama (SUNY Buffalo), Michael Evans (Virginia Tech)