

Jennifer M. Suh

Curriculum Vitae

University address:

George Mason University
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EDUCATION

PH.D. in Education, May 2005
Specialization in Mathematics Education Leadership
George Mason University, Fairfax, Virginia

Suh, Jennifer M. (2005) *Third Graders' Mathematics Achievement and Representation Preference Using Virtual and Physical Manipulatives for Adding Fractions and Balancing Equations*. Dissertation chair: Dr. Patricia Moyer-Packenham

Master of Teaching in Elementary Education, May 1994
University of Virginia, Charlottesville, Virginia

Bachelor of Art in Psychology, May 1994
Five Year Education Program, Certification K-8
University of Virginia, Charlottesville, Virginia

TEACHING

UNIVERSITY TEACHING EXPERIENCES

Assistant Professor, Mathematics Education (Fall 2006- Present)
George Mason University, Fairfax, Virginia

Member of Mathematics Education faculty
Member of Elementary Education faculty
Member of Mathematics & Science Education Leadership Program

Responsibilities include teaching graduate courses in Elementary Education Programs and Mathematics Education Leadership, assisting in the development and implementation of programs for students, advising students within the program, and supervising graduate students in field placements for the professional development schools.

Courses taught:

EDCI 552 – Mathematics Methods for the Elementary Classroom
An introduction to methods for teaching all children developmentally appropriate topics in number and operations, geometry, algebra, and data analysis. Students work with manipulatives and

technologies to explore mathematics, solve problems, and learn ways to teach mathematics content to children.

EDCI 666- Research in Mathematics Education

Research seminar for Master's level students in the Mathematics Specialists Leader Program and Mathematics /Science Education Leadership cohort program. Students survey the most current research literature in mathematics education and engage in research, study, and discussion of teaching and learning mathematics in school settings.

EDCI 633 -Advanced Mathematics Methods for the Elementary Classroom

Focuses on teaching all children problem solving and higher order thinking skills based on state and national mathematics standards. A variety of techniques and materials are used to promote better understanding of various mathematical concepts. Students read, interpret, and critique mathematics education research and examine its applications in classrooms.

EDCI 609 -Problem Solving in Mathematics

Focuses on the learning processes fundamental to the development of mathematical thinking. Examines a variety of instructional strategies and materials related to the broad scope of mathematical content.

EDCI 790 - Internship in Education

Graduate interns are supervised in a Professional Development School placement setting that includes observations and seminar experiences.

Course taught in collaboration with UVA (Summer 2007)

EDCI 680-Teaching Mathematics for Diverse Populations

Mathematics specialists focus on characteristics of students with diverse learning and cultural needs and how to teach mathematics content using a variety of instructional materials, assessment tools, strategies, and techniques for teaching mathematics. Emphasis on supporting the power and complexity of students' mathematical thinking

University Supervisor. (2004-Present).

Elementary Education Program, George Mason University, Fairfax Virginia.

Supervised preservice elementary teachers during their student teaching internship at Westlawn Elementary, Fall Church, Virginia

Super-Adjunct Professor (Fall 2004-Spring 2006)

George Mason University, Fairfax, Virginia

Adjunct Professor (2003-2004)

Marymount University Arlington, Virginia

ED 548 Mathematics and Technology PK-3 & 4-6

This course was designed to help interns develop an understanding of how children develop mathematics and technology knowledge and skills, and how mathematics and technology are interrelated; to develop appropriate attitudes towards the teaching of these disciplines; and to develop instructional strategies needed to become effective teachers of the inquiry curriculum in grades PK-6.

PUBLIC SCHOOL TEACHING EXPERIENCES (10 years)

Third Grade Teacher, Little River Elementary School, Loudoun, Virginia

August 2003-June 2004

Taught 3rd grade mathematics and science.

Fifth Grade Mathematics Teacher, Little River Elementary School, Loudoun, Virginia

August 2002-January 2003

Taught departmentalized 5th grade mathematics at three levels: accelerated math, on grade level and remedial/inclusion class.

Third Grade Teacher, Little River Elementary School, Loudoun, Virginia

August 2001-June 2002

Taught 3rd grade class where students are challenged with work that is matched to their abilities and developmental levels.

Gifted Education Teacher, Willow Springs Elementary School, Fairfax, Virginia

August 1998-June 2001

Taught a third grade Gifted and Talented class in an accelerated academic program in math and language arts.

Multiage Elementary Teacher, Lemon Road Elementary School, Falls Church, Virginia

August 1996-June 1998

Taught a 2/3 grade multiage class where students are challenged with work that is matched to their abilities and developmental levels.

Korean Immersion Elementary Teacher, Seoul American Elementary School, Seoul, Korea

August 1994- June 1996

Taught a third grade partial Korean Immersion class for the Department of Defense Dependents school.

INTERNSHIP

National Foundation for the Improvement of Education

National Education Association Summer of 1992

Research entitled " Diversity in Education: Implications of Current Diversity in Student Population on Educational Trends".

RESEARCH

PUBLICATIONS

Research Interests

Developing mathematics pedagogical content knowledge and confidence in teachers

Building mathematical proficiency to diverse student populations

Using multiple representations, mathematical models and emerging technology to enhance teaching and learning

Journal Articles (Refereed)

Suh, J. M., Johnston, C. & Doud, J. (In press). Enhancing mathematics learning in a technology rich environment. *Mathematics Teaching in the Middle School*. NCTM.

Suh, J. M. & Jamieson, S. (In press). Collaborative mentoring: Establishing a mathematics teaching & learning community through Lesson Study. *NCTM's Empowering Mentors of Mathematics*, NCTM.

Suh, J. M., Johnston, C., Mills, M., & Jamieson, S. (in press). Promoting decimal number sense and representational fluency. *Mathematics Teaching in the Middle School*. NCTM.

Hjalmarson, M. & Suh, J. M. * (In press). Developing mathematical pedagogical knowledge by evaluating instructional materials. *Inquiry into Mathematics Teacher Education*. *AMTE Monograph V*.

Suh, J. M., & Moyer-Packenham, P. S. (2007). Developing students' representational fluency using virtual and physical algebra balances. *Journal of Computers in Mathematics and Science Teaching*, 26 (2), 155-173.

Scaptura, C., Suh, J. M., & McHaffey, G. (2007). Masterpieces to mathematics: Using art to teach fraction, decimal, and percent equivalents. *Mathematics Teaching in the Middle School*, 13(1), 24-28.

Suh, J. M. (2007). Developing "Algebra -rithmetic" in the elementary grades. *Teaching Children Mathematics*, NCTM.

Suh, J. M. (2007). Tying it all together: Building mathematics proficiency for all students. *Teaching Children Mathematics*, NCTM.

Suh, J. M., Moyer, P.S., & Heo, H. J. (2005). Examining technology uses in the classroom: students developing fraction sense by using virtual manipulative concept tutorials, *Journal of Interactive Online Learning*, 3(4), 1-22.

Heo, H. J., Suh, J. M., & Moyer, P. S. (2004). Impacting student confidence: The effects of using virtual manipulatives and increasing fraction understanding. *The Journal of Educational Research in Mathematics*, 14(2), 207-219.

Suh, J. M., Moyer, P. S. & Sterling, D. (2003) Junior Architect: Designing your dream clubhouse using measurement and geometry, *Teaching Children Mathematics*, 10(3), 170-179.

Conference Proceedings (Refereed)

Suh, J. M., Moyer, P. S., & Heo, H. J. (2005). Technology uses in the mathematics classroom: Understanding fractions using virtual manipulatives concept tutorials. *Proceedings of the 3rd Annual Hawaii International Conference on Education* (pp. 4479-4499). ISSN# 1541-5880.

Lynch, M. C., Moyer, P. S., Suh, J. M., & Frye, D. (2002). Web-based learning: Telecollaboration models to enhance mathematics instruction. In A Rogerson (Ed.). *Proceedings of the International Conference on the Humanistic Renaissance in Mathematics Education* (pp.279-282). Casio & Autograph.

Manuscript Under Review

Suh, J. M., Dockery, K., & Jamieson, S. (under review). High leverage teaching practices for diverse student populations. *Teaching Children Mathematics*, NCTM.

Suh, J. M., Dockery, K. (under review). Teacher leadership. Time for excellence. *Educational Leadership*, ASCD.

Moyer, P. S., Salkind, G., Bolyard, J. J., & Suh, J. M. (under review) When teachers plan mathematics lessons using manipulatives, technology and other tools. *Journal of Research in Mathematics Education*, NCTM

Manuscript in Progress

Suh, J. M. (In progress). Exploring mathematical models using virtual manipulatives to deepen pedagogical mathematics content knowledge

Suh, J. M. & Moyer, P. S. (In progress). Using Principles of multimedia learning in virtual mathematics environment

Suh, J. M. & Johnston, C. (In progress). Technology Tools for Mathematical Learning

Suh, J. M. & Parker, J. (In progress). Developing Professional Practice through Collaborative Lesson Planning with Pre-service Teachers

Curriculum Publications

Math Bridges: K-8 On-line resources for technology and mathematics (2007)
<http://mason.gmu.edu/~jsuh4/mathbridges/index.html>

Illumination Lesson Plans (2005)
Developed geometry and measurement lessons for NCTM's Illumination website.

Gifted Readers' Resource Guide (Summer 2000)
Curriculum development for FCPS Gifted and Talented Program
Developed a resource guide for Gifted and talented 3-4 grade using the themes of Change, Creativity, Perspectives and Interdependence.

Our Club House (Summer 2000)
Curriculum development for FCPS Gifted math program
Enrichment for primary students using real life problem solving.

Magical Earth (Summer 2000)
Curriculum development for FCPS Summer Math Program
Enrichment for primary students integrating science and math related to our earth.

Teacher Researcher Project
Fairfax County Public School Fall 1997-1999
Research entitled "Implementing Inquiry-Based Learning in a Multiage Classroom".

PROFESSIONAL PRESENTATIONS AND WORKSHOPS

INTERNATIONAL PRESENTATIONS

The Application of Dual Coding Theory in Multi-Representational Virtual Mathematics Environments
International Conference on Psychology of Mathematics Education (Research report)
Seoul, Korea, July 8-13, 2007

Examined the application of Dual Coding Theory (DCT) in multi-representational virtual mathematics environments focusing on the nature of learners' algorithmic thinking processes when exploring mathematical tasks with dynamic electronic objects, or virtual manipulatives.

Building Mathematical Knowledge For Teaching Using Tech-Knowledge
International Conference on Psychology of Mathematics Education (Poster presentation)
Seoul, Korea, July 8-13, 2007

Explored pre-service teachers' experiences with planning and teaching with technology and its impact on their mathematical knowledge for teaching, confidence and attitude about teaching mathematics.

Third Graders' Achievement and Representation Preference Using Virtual and Physical Manipulatives in Adding Fractions and Balancing Equations in Algebra
International Consortium for Research in science and Mathematics Education
Nassau, Bahamas, March 9-11, 2006

Presented dissertation findings that compared virtual and physical manipulatives in teaching fractions and algebra concepts to third graders.

Technology Uses in the Mathematics Classroom: Understanding Fractions Using Virtual Manipulatives Concept Tutorials

Hawaii International Conference on Education, January 4-7, 2005.

Presented research findings that revealed unique characteristics of the fraction manipulatives that enhanced understanding for fraction equivalence and addition in third graders.

NATIONAL PRESENTATIONS

I Can Solve It! Developing Persistent Flexible Problem Solvers

National Council of Teachers of Mathematics: Salt Lake City, UTAH, APRIL 2008

Teachers who participated in NCTM's Lesson Study present lessons and teaching strategies that develop persistence and flexibility

Teachers Building Mathematics Knowledge Side by- Side through Collaborative Planning

Association of Mathematics Teacher Educators: Tulsa, Oklahoma, January 2008

Presented a project involving preservice and inservice teachers working collaboratively on planning, teaching and reflecting on mathematics lessons.

Modeling and Investigating Mathematics Concepts Using Interactive Math Applets and Virtual Manipulatives in Elementary Grades

National Educational Computing Conference ISTE. Atlanta, Georgia, June 22-25, 2007

Explored issues surrounding integrating technology into mathematics, with a focus on modeling mathematics concepts and designing investigations using virtual manipulatives and applets. The experiences of 22 pre-service teachers during a semester long mathematics methods course are shared through analysis of surveys, reflection based on designing a lesson using these tools, class discussion and teacher interviews.

Third Graders' Mathematics Achievement Using Virtual and Physical Manipulatives for Adding Fractions and Balancing Equations

AERA Poster presentation, Chicago, Illinois. April 9-12, 2007.

Presented dissertation findings that compared virtual and physical manipulatives in teaching fractions and algebra concepts to third graders.

Modeling Mathematics Concepts Meaningfully Using Technology

Association of Mathematics Teacher Educators: Irvine, California. January 26, 2007.

Presented data gathered from the learning experiences of 22 preservice teachers who explored mathematical concepts and models using technology and showcased ways pre-service teachers incorporated virtual manipulatives in their lessons.

Introduction to Lesson Study

National Council for Teachers of Mathematics Workshop - August 2-5, 2006

This course, offered during the 2006-2007 academic year, allowed a group of teachers the chance to learn and practice a Japanese lesson study approach to mathematics instruction while earning 3 graduate credits.

Implementing the Algebra Standard in Grades 3-5

National Council of Teachers of Mathematics e-workshops

January & February 2006: 90-minute E-Workshops offering approaches and techniques for integrating algebraic concepts in the classroom.

Junior Architect: Design your clubhouse using Measurement and Geometry

NCTM Conference: San Antonio, Texas. April 2003.

Our Clubhouse Project is a project based learning activity, which explores geometry, measurement and fraction concepts through problem solving and the use of manipulatives. Students take the role of junior architects as they solve a variety of math problems related to real life architecture, construction, and budgeting while designing and building a clubhouse.

STATE AND REGIONAL PRESENTATIONS & WORKSHOPS

Algebracadabra: Demystifying Algebraic Reasoning for Elementary Grades

National Council of Teachers of Mathematics Regional Conference:

Atlantic City, New Jersey. October 20-22, 2006.

Shared strategies with elementary teachers to reconceptualize the meaning of algebra so that it can be integrated into the curriculum.

Developing Mathematical Proficiency for All Students

Professional Development Workshop for Loudoun County Public School - August 2004

Presented a three hour workshop for 120 teachers from grades 3-5 to promote math proficiency in all students.

Living in a 2 D & 3D World

VCTM Conference: Richmond, Virginia. (March 2003)

Presentation about plane and solid geometry using virtual and concrete manipulatives

SOL Concept Bridges

Virginia Council of Mathematics: Manassas, VA. (March 16, 2002)

Presentation about teaching VA. Math SOL using physical and virtual manipulatives

Math Bridges: Connecting Concepts using Physical and Virtual Manipulatives

Loudoun County Inservice Day (March 11, 2002)

Presentation about using physical and virtual manipulatives to bridge conceptual and procedural knowledge.

Our Club House: Using Project Based Math

Virginia Council of Teachers of Mathematics : Harrisonburg, Va.(March 9, 2001)

Presentation about using a project based approach to teach geometry and measurement.

RESEARCH SUPERVISION

PhD portfolio committee member

Hana Oh- Mathematics Educational Leadership

Wendy Schudmak- Mathematics Educational Leadership

GRANT PROJECTS

Grant Submitted

Principal Investigator: "ACT now: Algebraic Connections and Technology for the Middle Grades"

State Council of Higher Education for Virginia, \$ 80,000

Professional Development grant for a summer institute to develop teachers proficiency in developing algebraic connections through technology

Grants Funded

NCTM MET Grant: Classroom research grant 2008-2009

Principal Investigator of Classroom Research K-6 with Kerri Fulginiti, 4th grade teacher

National Council of Teachers of Mathematics \$8,000

Classroom research grant for a summer institute to develop mathematics problem solving skills with mathematical promising students from diverse populations.

Washington Post Grants in Education - Awarded October 2002. Project Director

Dazzling Discoveries Grant: Math, Science, and Technology Expo

Math month activities and Family math, science and technology night

Loudoun Educational Foundation Grant - Awarded October 2002. Project Director

Dazzling Discoveries Grant: Math, Science, and Technology Expo

Math month activities and Family math, science and technology night

Washington Post Grants in Education - Awarded November 2001. Project Director

Every Living Thing Grant

Integrating math and science with an animal unit

Loudoun Educational Foundation Grant - Awarded October 2001. Project Director

Travels to Ancient Lands Grant

A Hands-on project based Social Studies Project

Grants- Lead Instructor

MATH BRIDGES II Project: Concepts and Connections in the K-8 Standards (2003-2004). Lead instructor for Grades 3-4 teachers. No Child Left Behind Grant. Project goal: Provide professional development in the use of concrete and virtual manipulatives for 80 K-8 teachers in the Loudoun County Public School System that increases the mathematics achievement of students.

MATH BRIDGES I Project: Concepts and Connections in the K-8 Standards (\$65,347). (2002-2003). Lead instructor for Grades 3-4 teachers. Dwight D. Eisenhower Professional Development Program, Virginia. Project goal: Provide professional development in the use of concrete and virtual manipulatives for 60 K-8 teachers in the Loudoun County Public School System that increases the mathematics achievement of students.

AWARDS

Graduate School of Education Ph. D. Award Spring 2005.

College of Education and Human Development, George Mason University

Fairfax County Public Schools Teacher of the Year & Washington Post's Agnes Meyer Award

Nominee- Nominated for 2000-2001 school year.

SERVICE ACTIVITIES

INTERNATIONAL LEADERSHIP AND SERVICE

NATIONAL LEADERSHIP AND SERVICE

Illumination Advisory Group for the National Council of Teachers of Mathematics (March, 2008)

Served as a member of an advisory group for the research and development of NCTM's Illumination Project.

Reviewer for National Council of Teachers of Mathematics journal, Teaching Children Mathematics (2006-2007).

Review submitted journal articles on a regular basis.

Reviewer for Association of Mathematics Teacher Educator's journal TE-MAT (2006-2007). Teacher Education Materials Project provides descriptions of professional development materials for mathematics teachers.

Instructor for National Council of Teachers of Mathematics Lesson Study Course (Summer 2006 & 2007)

Content Expert Reviewer (2007). Technology Intergration in the Content Areas. Thomson Publishing.

STATE LEADERSHIP AND SERVICE

University facilitator (2004-present). *Professional Development School Partnership.* Spend one day each week at Westlawn Elementary School, Fairfax Count Public Schools, Falls Church, Virginia.

OUTREACH FOR SCHOOLS

Consultant for Professional Development for Lesson Study for DC Charter School. E.L. Haynes (Spring 2008). Providing long term professional development for teachers in establishing a Lesson Study community.

Consultant for Teacher Leadership Grant. Westlawn Elementary, Falls Church, Virginia (Summers 2006 & 2007).

Collaborated (in kind) on a grant for Developing Teacher Leadership for Summer Institutes for

Instructor for Westlawn Labschool Summer Institute, Falls Church, Virginia (Summer 2006-2007).

Planned and taught professional development workshop for a three week summer institute for Westlawn Elementary School in Falls Church, Virginia

Lead Instructor (3-4). MATH BRIDGES II Project: Concepts and Connections in the K-8 Standards. (2003-2004).

Two week course with four follow-up classes

No Child Left Behind Grant. Professional Development Program, Virginia

Project goal: Provide professional development in the use of concrete and virtual manipulatives for 80 K-8 teachers in the Loudoun County Public School System.

Lead Instructor (3-4). MATH BRIDGES Project: Concepts and Connections in the K-8 Standards. (2002-2003). Two week course with four follow-up classes

Dwight D. Eisenhower Professional Development Program, Virginia (\$65,347). Project goal: Provide professional development in the use of concrete and virtual manipulatives for 60 K-8 teachers in the Loudoun County Public School System.

PROFESSIONAL SERVICE- INSTITUTIONAL

College Level- College of Education and Human Development, George Mason University

Program Level (2 Primary Program Affiliations)

Mathematics Education Leadership program, George Mason University

- Committee member for Mathematics Education Leadership Doctoral Portfolio reviews (on going service)
- Revised syllabus for EDCI 666 Research in Mathematics Education
- Supervised three Ph.D. Mathematics Education Leadership students in their teaching internship
- Interviewed candidates for program admission (ongoing service).

Elementary Education Program Service, Graduate School of Education, George Mason University.

- Develop a University Facilitators' Manual
- Interview candidates for program admission (ongoing service).
- Advise students in the program (ongoing service).
- Plan and attend Orientations for incoming PDS/Partnership interns
- Elementary Education Faculty Representative:
Teacher Licensure Information Sessions
Graduate Student Showcase Sessions
- Supervised interns each week at Westlawn Elementary School.
- Develop and revise program materials (i.e., PDS Handbook, Portfolio Evaluation form) (ongoing service).
- Complete and contribute mathematics sections to program reports on TASKSTREAM (i.e., NCATE, ACEI) (ongoing service).
- Participate in program advertising, recruiting, and information sessions for PDS and PS cohorts (ongoing service).
- Supervise graduate students in public school field placements (2004-2007).

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- American Educational Research Association
- Association for the Psychology of Mathematics Education, North American Chapter and International member
- National Council for Teachers of Mathematics
- Association for Supervision and Curriculum Development
- Association for Mathematics Teacher Educators