

Carol J. Bell, Ph.D.

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Education

University of Texas; Austin, Texas

Doctor of Philosophy, May 2001

Mathematics Education

Dissertation: *Conceptual Understanding of Functions in a Multi-Representational Learning Environment*

University of Illinois; Champaign-Urbana, Illinois

Master of Science, May 1988

Mathematics

Bemidji State University; Bemidji, Minnesota

Bachelor of Science (honors), May 1986

Majors: Mathematics and Computer Science

Minor: Business Administration

Professional Experience

Associate Professor of Mathematics, August 2007 – present

Northern Michigan University, Marquette, MI

- Courses taught: Mathematics for the Elementary School Teacher I & II; Methods of Teaching Elementary School Mathematics; Junior High School Mathematics Methods and Materials; Mathematical Representation, Reasoning, and Patterns (graduate course); and Technology-Assisted Mathematics Instruction.

Associate Professor of Mathematics, September 2003 – August 2007

State University of New York College at Cortland, Cortland, NY

- Courses taught: The Cortland Experience (course for freshman designed to ease the transition from high school to college), History of Mathematics (synchronous and asynchronous course), Statistical Methods, Methods I: Teaching Adolescence Mathematics (undergraduate and graduate levels), Methods II: Field Experiences in Adolescence Mathematics (undergraduate and graduate levels both synchronous and asynchronous), Technologies in the Adolescence Mathematics Classroom (graduate course), Concepts of Elementary School Mathematics I, Calculus I & II, Introduction to Computer Applications (includes MS Word, Excel, PowerPoint, and Access), Graduate Seminar in Teaching Adolescence Mathematics, student teaching supervision, and supervised several independent studies with both undergraduate and graduate students.
- Project/Thesis advisor for several graduate students completing their master's degree.

- Designed curriculum for the following courses: History of Mathematics, Methods I & II, Technologies in the Adolescence Mathematics Classroom, a discipline specific section of Introduction to Computer Applications, and the Graduate Seminar in Teaching Adolescence Mathematics.
- External reviewer for Master of Arts in Teaching in Mathematics 7-12 program developed by SUNY Oswego.
- Worked with colleagues in English, Science, and History on a project to help teachers at Newfield High School integrate writing in their discipline.

Coordinator, Adolescence (7 - 12) Mathematics Education,

August 2000 – August 2007

State University of New York College at Cortland, Cortland, NY

Responsibilities:

- Oversee the supervision of student teachers in the Adolescence Mathematics Education (AEM) program, the Master of Arts in Teaching program and the Adolescence Physics-Mathematics Education program (mathematics placements only).
- Provide leadership in the design and delivery of the department's courses in pedagogy (both undergraduate and graduate).
- Oversee the admission of students into the AEM program through the establishment and periodic review of appropriate requirements.
- Make recommendations on curriculum and degree requirements for the AEM program to ensure compliance with guidelines and regulations established by Cortland, SUNY, SED, NCATE, and other external agencies.
- Provide leadership in completing documents related to SED program registry and external accreditation of the AEM program.
- Student recruitment and program promotion activities including representing the department during Open House, developing brochures and other promotional materials, and serving on department scholarship committees.
- Represent the Mathematics Department on the Arts & Sciences Secondary Education Council and the Teacher Education Council.

Additional Activities:

- Planned the fall and spring Mathematics Student Teaching Conference for students who student taught during the semester.
- Worked toward developing a Middle Childhood (grades 5-8) Mathematics Education degree program.

Assistant Director of Graduate Studies, August 2002 – July 2003

State University of New York College at Cortland, Cortland, NY

Responsibilities:

- Interacted with and advised both current and prospective graduate students.
- Processed graduate admissions (Certificate of Advanced Study program), graduation checklists, and other forms (Change of Status, Candidacy, and Transfer of Credit).
- Assisted in the maintaining, refining, or revising of all policies and procedures related to graduate studies.
- Assisted in activities of graduate faculty governance, which included meeting with graduate coordinators from all schools on a regular basis.

- Developed and distributed information related to graduate programming and NYSED-related certification.
- Assisted with the development of curriculum including the approval processes for said development.
- Assisted with NCATE-related matters.

Mathematics Graduate Coordinator,

August 2000 – August 2002 & December 2002 – May 2003

State University of New York College at Cortland, Cortland, NY

Responsibilities:

- Student recruitment and program promotion activities including meeting with prospective students to discuss program requirements, and developing brochures and other promotional materials.
- Review applications for admission to the M.A.T. and M.S.Ed. programs.
- Oversee the advisement of graduate students.
- Make recommendations on scheduling of graduate course offerings in mathematics.
- Make recommendations on curriculum and degree requirements for the M.S.Ed. and M.A.T. programs to ensure compliance with guidelines and regulations established by Cortland, SUNY, SED, NCATE and other external agencies.
- Provide leadership in completing documents related to SED program registry and external accreditation of the M.A.T. and M.S.Ed. programs.

Additional Activities:

- Developed a graduate advisement manual.

Assistant Professor of Mathematics, August 2000 – August 2003

State University of New York College at Cortland, Cortland, NY

- Courses taught: History of Mathematics, Methods of Teaching Mathematics in the Secondary School, Concepts of Elementary School Mathematics I & II, Statistical Methods, and Student Teaching Supervision.
- Math Club Advisor, 2001 – 2004

Visiting Instructor of Mathematics, August 1998 – May 2000

Southwestern University; Georgetown, TX

- Courses taught: Elementary Function Theory, Introduction to Statistics, Mathematical Concepts, and Calculus I.

Adjunct Mathematics Instructor, August 1993 – May 2000

Austin Community College; Austin, TX

- Courses taught: Pre-algebra, Elementary Algebra, Intermediate Algebra, College Algebra, Trigonometry, Pre-calculus, Mathematics for Business and Economics, Business Calculus I & II, and Mathematics: Its Spirit and Use.

Assistant Mathematics Instructor, August 1995 – August 1998 & July 1999 – August 1999
Mathematics Department, University of Texas; Austin, TX

- Courses taught: Foundations of Arithmetic, Practicum for Secondary Mathematics Education Majors, Introduction to Mathematics and Technology, and College

Algebra (for both Gateway program and the Preview program – university retention programs).

Assistant Mathematics Instructor, June – August 1995, 1996, 1997

Mathematics Department, University of Texas; Austin, TX

- Courses assisted: Calculus II and College Algebra (as part of the university Provisional program).

Assistant Mathematics Instructor, August 1996 – August 1998

University Extension, University of Texas; Austin, TX

- Courses taught: College Algebra and Business Calculus I & II.

Mathematics Teaching Assistant, August 1994 – August 1995

Mathematics Department, University of Texas; Austin, TX

- Courses assisted: Calculus I and Mathematics for Liberal Arts Students.

Mathematics Tutor, August 1995 – May 1996

Men's Athletics, University of Texas; Austin, TX

Mail Clerk, 1996 (seasonal employment)

Internal Revenue Service; Austin, Texas

- Responsible for staging and handling mail receipts.

Production Control Clerk, 1994 – 1995 (seasonal employment)

Internal Revenue Service; Austin, TX

- Performed various clerical duties such as maintaining informational reports and inputting data into an automated control system.

Mathematics Instructor, August 1991 – August 1993

Northern Arizona University; Flagstaff, AZ

- Courses taught: College Algebra, Trigonometry, Pre-calculus, Finite Mathematics, Matrix Algebra, Business Calculus, Calculus I & II, and presented algebraic concepts via the university television channel.
- Head of mathematics tutoring program, served on a variety of committees, and provided seminars for mathematics tutors.

Adjunct Mathematics Instructor, August 1992 – May 1993

Coconino Community College; Flagstaff, AZ

- Courses taught: Intermediate Algebra.

Mathematics Instructor, September 1990 – May 1991

Rochester Community College; Rochester, MN

- Courses taught: Basic Mathematics, Elementary Algebra, Multivariable Calculus, and Differential Equations (via interactive television).

Associate Programmer, June 1988 – February 1991

International Business Machines; Rochester, MN

- Systems development programmer in the Data Definition and Presentation Enabling Interfaces departments.
- Responsible for designing and testing code, communicating new developments to other team members and other affected departments, creating tutorials on the AS/400 for new functions in the department and presenting them to customers.
- 1990 IBM Club Director.

Publications and Presentations

- *Using functions to create pictures in Excel*, MAA Upper Peninsula Regional Fall Meeting, Lake Superior State University, September 13, 2008.
- *The role of online communities in developing students' understanding of proof*, International Conference on Technology in Collegiate Mathematics, San Antonio, Texas, March 2008.
- *Assessing students' understanding of proof in an online course*, Mathematics and Computer Science Colloquium and Seminar Series, Northern Michigan University, February 2008.
- Bell, C. J. (2008). Pre-service teachers' justifications of an (NCTM) electronic example, Online Journal of School Mathematics, 6.
- *Visual exercises that promote mathematical reasoning in the classroom*. Workshop for middle school and high school teachers, Fall Conference for Educators, October 12, 2007.
- *Visual exercises that help develop mathematical reasoning*, workshop for grades 7-12 mathematics teachers at the Cornell Mathematics Outreach Saturday Workshops for Teachers, May 10, 2007, Cornell University.
- *Getting your scholarship off to a good start – Panel and Open Discussion*, MAA Seaway Section Meeting, April, 27, 2007, SUNY Oneonta. Panel participant.
- *Math: A Paradigm Shift for Conceptual Understanding*, keynote address with Professor Susana Davidenko (Childhood Education, SUNY Cortland) at the New York State Association of Comprehensive Education Central New York Region Conference, SUNY Cortland, April 25, 2007.
- *What's to Learn in Grades 5-8?* Workshop for K-8 teachers, New York State Association of Comprehensive Education Central New York Region Conference, SUNY Cortland, April 25, 2007.
- *Pioneer Women in Mathematics: Their Lives and Contributions*, invited talk at Rochester Institute of Technology Mathematics Department Colloquium, April 11, 2007.
- *Teacher education in China: An overview from participation in the People to People Ambassador Program*, Sandwich Seminar, November 2005, SUNY Cortland.
- *Whither the textbook?* MAA Seaway Section Meeting, October 2005, SUNY Geneseo. Participant in round table discussion on mathematics textbooks.
- *Infusing ADEPT ideas into SUNY Cortland's mathematics teaching program*, joint presentation with Cristina Bacuta at the Allied Delmarva Enhancement Program for Teachers (ADEPT) K-16 Collaboration Workshop, June 2005, Salisbury University, Maryland.
- Bell, C. J. (2005). Student presentation of mathematics problems, The Teaching Professor, 19(4), 4.
- *Panel discussion: Issues in teacher education*, panel co-organizer and participant, spring 2005 Seaway Section MAA meeting, April 2005, Queen's University, Canada.

- *The importance of time over the centuries*, MAT 480 History of Mathematics class, Scholar's Day Poster Session, April 2005, SUNY Cortland.
- *From Associates to Bachelors: Changing expectations*, panel organizer and moderator, fall 2004 Seaway Section MAA meeting, November 2004, Canesius College.
- *Classroom Teaching Ideas*, Mathematics Department Teaching Seminar, November 2004.
- *Portfolios and Teaching Circles*, presentation at the New Faculty Orientation, Raquette Lake, October, 2003 & 2004.
- *The First Year Experience as a Faculty Member*, panel participant and co-organizer, Mathfest, August 2004, Providence, RI.
- *A Freshman Seminar for Math Majors*, joint presentation with Bruce Mattingly and Chris Hanford (student), spring 2004 Seaway Section MAA meeting, April 2004, SUNY Cortland.
- Guest speaker at the fifth annual Alpha Sigma Lambda (adult honor society) Induction ceremony held on April 28, 2004 at SUNY Cortland.
- *Authentic assessment in the middle school mathematics classroom*, Joint Cortland-Homer Professional Development Day (workshop), March 2004, Cortland Junior-Senior High School.
- *The use of online modules and WebCT in teaching history of mathematics*, Conference on Instructional Technologies, May 2003, SUNY Potsdam.
- *Teaching an online history of mathematics course*, The International Conference on College Teaching and Learning, April 2003, Jacksonville, Florida.
- *The mathematics of Africa and the history of black mathematicians*, Sandwich Seminar presented with spring 2003 history of mathematics class, February 2003, SUNY Cortland.
- Bell, C. J. (2002). *Introducing preservice mathematics teachers to hypermedia*. (ERIC Document Reproduction Service No. ED 460 014)
- *Journal assignments and projects*, MAA Seaway Section Meeting (Seaway NExT session on issues in the mathematical preparation of future elementary school teachers), April 2002, SUNY Brockport.
- *Women count: An historical look at women and mathematics*, Sandwich Seminar, March 2002, SUNY Cortland.
- *Designing a methods course for secondary mathematics education majors*, Joint Mathematics Meetings (Project NExT session on preparing future teachers), January 2002, San Diego, California.
- *Integrating web resources into a history of mathematics course*, Summer Seminar on the History of Mathematics, July 2001, Bemidji State University.
- *Integrating web resources into a history of mathematics course*, Eighth Annual Czech-Polish Mathematics Schools Conference, June 2001, University of J.E. Purkyne.
- Panelist for SUNY Cortland Multimedia Showcase, Conference on Instructional Technologies, May 2001, SUNY Geneseo.
- Presentation of instructional technology project at Multimedia Grant Recipient Symposium, May 2001, SUNY Cortland.
- Bell, C. J. (1998). The placement of underprepared students in developmental mathematics courses. *The AMATYC Review*, 19(2), 32 – 41.
- *Integrating real world applications and the internet in a mathematics course for liberal arts students*, AMATYC, Atlanta, Georgia, November 1997.
- *Introducing preservice mathematics teachers to hypermedia*, Conference on the Teaching of Mathematics, Baltimore, Maryland, June 1996.

- *Assessing constructivist techniques in a secondary mathematics certification program*, Joint Mathematics Meetings, Orlando, Florida, January 1996.

Student Projects/Theses Supervised

- *A Comparison of the Educational Systems in New York State and Queensland, Australia*, Shane Sint (in-progress graduate project).
- *Current Developments of Academic Intervention Services in Mathematics*, Mark Rauch (May 2008 – graduate thesis).
- *Effective Strategies for Teaching Students with Learning Disabilities*, Bridget Ainsworth (August 2007 – graduate project).
- *Technology in the Classroom: The Interactive Whiteboard*, Brittany Schenk (May 2007 – graduate project).
- *What is a Hypercube?* Jason Ouderkirk (April 2006 – talk presented at the spring MAA Seaway Section Meeting at Ithaca College).
- *(GPS)-Global Positioning Systems and Mathematics*, Jason Ouderkirk (April 2006 – talk presented at the spring MAA Seaway Section Meeting at Ithaca College).
- *Relating an Advanced Viewpoint of Divisibility Tests for 7, 11, and 13 to Middle School Students*, Ellen Luber (May 2006 – paper written for undergraduate independent study).
- *Creating a District Alternative School Program for At-Risk Middle School Students*, Todd Noyes (August 2005 – graduate project).
- *Writing in the Secondary Mathematics Classroom: Research and Resources*, Cynthia J. Herrick (May 2005 – graduate thesis).
- *Trigonometric Graphing: A Hands-on Technological Approach*, by James Szalach (August 2003 – graduate project).

Grants

- Mathematics and Science Integration: Special Topics Institute to Improve Student Learning in High School, New York State Education Department, 2007. Award amount: \$11,847.
- Using TaskStream to Assess AEM Majors, College Assessment Incentive Grant Program (SUNY Cortland), 2006. Award amount: \$2,000.
- Technology Innovations Grant (SUNY Cortland) recipient to develop a discipline specific CAP 100 course, 2004. Award amount: \$750.
- Distance Learning Course Redesign Grant (SUNY Cortland) recipient to develop AED 692: Field Experiences in Mathematics Teaching as an asynchronous course, 2003. Award amount: \$750.
- Title III Instructional Technology Grant (SUNY Cortland) recipient to incorporate WebCT in teaching History of Mathematics, 2002. Award amount: \$1,200.
- Long Range Plan Goal 3.3 Technology Grant recipient (SUNY Cortland) to purchase a TI-Graph Link Cable and ten TI-83+ Graphing Calculators, 2002. Award amount: \$1,000.
- 2001-2002 Travel and Research Grant recipient (SUNY Cortland). Award amount: \$319.02.
- 2000-2001 Faculty Multimedia Development Grant recipient (SUNY Cortland) to incorporate instructional technologies in teaching History of Mathematics. Award amount: \$750.

Awards and Fellowships

- Recipient of *Excellence in Research, Scholarship, and Outreach* award, SUNY Cortland, for work on SED grant titled “Mathematics and Science Integration: Special Topics Institute to Improve Student Learning in High School.”
- *Empire Who’s Who* Professional of the Year for 2006 – 2007 representing Education: Methodologies of Teaching Mathematics.
- Discretionary Salary Increase, SUNY Cortland: 2001 – 2006.
- Nominated for SUNY Chancellor’s Award for Excellence in Faculty Service, 2005.
- 2005-2006 Edition of *Empire Who’s Who Executive & Professional Registry*.
- Award for Innovative Excellence in Teaching, Learning and Technology, The International Conference on College Teaching and Learning, 2003
- Nominated for Ernest L. Boyer International Award for Excellence in Teaching, Learning, and Technology, 2003
- Teaching Award for Excellence in Incorporating Technology into courses, SUNY Cortland, 2002
- Strong Woman on Campus Award, SUNY Cortland, 2002
- MAA Project NExT Fellow, 2001 – 2002
- MAA Seaway NExT Fellow, 2001
- Jewel Popham Raschke Endowed Presidential Scholarship for Mathematics Education, University of Texas at Austin, 1996 – 1997.
- Performance Award, Internal Revenue Service, 1995.
- Outstanding Mathematics Student, Bemidji State University, 1986.
- Second runner-up Outstanding Student, Bemidji State University, 1986.
- Second runner-up Outstanding Student Paper/Work of Creativity, Bemidji State University, 1986.
- Magna cum Laude and Honors Graduate, Bemidji State University, 1986.

Committee Work and Other Activities

Northern Michigan University

- Mathematics Education Committee, 2007 – 2008
- Mathematics Education Graduate Committee, 2007 – 2008
- Department Seminar & Colloquium Committee, 2007 – 2008
- Department Web Site Committee, 2008
- Department Student Affairs Committee, 2008
- AAUP – Committee W, 2007

New York State Activities

- MAA Seaway Project NExT/PFF Advisory Committee, 2003 – 2007
- Chair, MAA Seaway Project NExT/PFF Advisory Committee, 2005 – 2007
- Member, MAA Seaway Educational Policy Committee, 2005 – 2007
- Co-Chair, Pre-service Teacher Education working group for the SUNY Provost’s Task Force on Mathematics Education, 2002 – 2004. The Task Force was created to address various aspects of mathematics education in New York State and make recommendations to the State Education Department. The working group addressed improving pre-service education of teachers.

SUNY Cortland – College Committees and Other College Service

- Graduate Faculty Executive Committee, 2006–2007
- Arts & Sciences Adolescence (Secondary) Education Council, 2000–2007
- Teacher Education Council, 2000–2007
- International Studies Committee, 2005–2007
- Electronic Portfolio Committee, 2004–2007
- SCAP Committee, 2004–2007
- Information Resources Advisory Committee, 2004–2007
- Information Resources Technology Liaison Partnership, 2003–2007
- Graduate Faculty, 2004–2007
- Pre-Student Teaching Field Experience Committee, 2001–2007
- Arts & Sciences Curriculum Committee, spring 2005
- Teaching Effectiveness Committee, 2005–2007
- Long-Range Planning Committee, 2000–2004
- Chair, Ad Hoc Committee to Review and Revise the Evaluation of Student Teachers, 2000–2002
- Ad Hoc Committee to Revise the Student Teacher Manual, 2001–2003
- Ad Hoc Committee for NCATE Standard #2, 2002–2003
- Ad Hoc Committee on Assessment, 2002–2003
- Ad Hoc Committee to Address In-service Teacher Incentives for the 100 Hours of Field Experience, 2001–2002
- Ad Hoc Committee to Address the Conceptual Framework, 2001–2002
- Ad Hoc Committee to Address Technology in Teacher Education, 2001–2002
- NCATE Standard #6 – Unit Governance and Resources Committee, 2001–2002
- Ad Hoc Committee to Establish By-Laws for Teacher Education Council, 2000–2001
- Ad Hoc Committee to Assess Technology Needs of Faculty, 2000–2001
- CURE (Center for Urban and Rural Education) Mentor, 2004
- Member, Faculty Development Committee, 2003–2005
- Member, non-traditional student scholarship selection committee, 2003
- Member, Search Committee for Associate Dean of Professional Studies, 2002–2003
- Member, Advisory Board, 2002
- Member, Search Committee for Assistant Director to Advisement and First Year Programs, 2001
- Mentor, Multicultural Faculty, Staff, and Students (Blake/Scott Mentor Program), 2001–2002

SUNY Cortland – Mathematics Department Committees

- Department Ad Hoc Committee to develop a new mathematics major, 2005-2006
- Department Ad Hoc Committee to review teaching effectiveness, 2005-2006
- Chair, Department Personnel Committee, 2004-2005
- Department Ad Hoc Committee on Department Use of Technology, 2002-2003
- Department Ad Hoc Committee to Evaluate Graduate Projects, 2002-2003
- Chairmanship Committee, 2002-2004
- Chair, Chairmanship Committee, 2001-2002
- Department Personnel Committee, 2001-2002 and 2003-2004

- Department Ad Hoc Committee on Assessment of Programs, 2000-2001

Other Activities

- *People to People International*, 50th Anniversary Conference participant, Sydney, Australia, August 2006.
- Visited University of the Sunshine Coast, Maroochydore, Queensland, Australia, and met with area school personnel and student teachers to gain knowledge about the Australian school curriculum and make recommendations to improve the student teaching abroad program in Australia, August 2006.
- *People to People Ambassador Program Teacher Education Delegation*, China, May 13 – 23, 2005.
- Information Resources Retreat, Raquette Lake, 2005 & 2006. Annual retreat to discuss the acquisition and implementation of information literacy and new technologies.
- *Discussions on Teacher Preparation: Mathematics K – 12*, Central New York Education Consortium. Meeting to facilitate conversation between colleges and school districts regarding requirements of teacher preparation programs and the qualifications that school districts seek. College representatives were asked to speak on the formative requirements the college believes are essential, the requirements imposed by the state and other entities, and the driving forces that shape the profile of their graduates. School district participants were asked to speak to the qualifications in mathematics education they seek for teacher certification at the elementary and secondary levels.
- Joint collaboration meeting between SUNY Cortland and area school districts to discuss the 175-hour professional development required by teachers obtaining an initial or professional certificate.
- Worked with Cornell University and Binghamton University to bring mathematics graduate students to SUNY Cortland to give talks.

Professional Memberships

- Mathematical Association of America (MAA)
- National Council of Teachers of Mathematics (NCTM)
- Association of Teacher Educators (ATE)
- People to People International (PTPI)

Research Interests

- Use of technological tools in teaching and learning mathematics.
- International and secondary teacher education – teacher preparation, teacher induction.
- History of mathematics curriculum in the schools and history of mathematics.
- Use of writing in teaching and learning mathematics.
- Assessing student learning in mathematics.