

Joel W. Duffin

President
Models for Thought, Inc.
<http://www.joelduffin.com/>

P. O. Box 529
Millville, UT 84326
(435) 770-2165
joel.duffin@gmail.com

EDUCATION

Ph.D. Instructional Technology, Utah State University, November 2003. Dissertation Title: Theory for Authoring Tools that Support Teacher Adaptation of Mathlets. Advisor: David Wiley.

M.S. Instructional Technology, Utah State University, June 1998.

B.S. Physics, University of Utah, June 1992.

B.A. Math, University of Utah, June 1992.

EMPLOYMENT

President

Models for Thought, Inc., Millville, UT 10/07 – Present. Obtain contracts, manage employees, lead development projects, commercialize educational software products.

- Models for Math – Bring interactive online math products to market based on materials licensed from MATTI Math.
- MATTI Math – Enhanced NLVM Application and localized it to Spanish, French, Simplified Chinese, and Arabic.
- Roberto Regazzi – Customized and extended MediaWiki for use by violin makers.
- COSL – Enhanced the OER Recommender and consulted with COSL partners to integrate recommender functionality into their educational websites.

Software Engineer

A Folksemantic Approach to the Semantic Web, Grant from the Andrew W. Mellon Foundation, Center for Open Sustainable Learning, Utah State University, Logan, UT 9/06 – 9/07

- Designed and developed, using Ruby on Rails framework, ozmozt, annorate, and makeapath Web2.0 applications (see <http://www.folksemantic.org/>).
- Programmed the Send2Wiki MediaWiki extension that makes it easy to copy web pages into wikis for customization (see <http://www.send2wiki.com/>).
- Designed and programmed a Java daemon to efficiently harvest RSS, microformats, and other formats for use in the folksemantic tool set.

- Researched and developed the OER Recommender system for connecting open educational resources in the National Science Digital Library with OpenCourseWares (see <http://www.oerrecommender.org/>).

Research Scientist

Extending and Enhancing the National Library of Virtual Manipulatives (eNLVM) and Math Tools Digital Library NSF Grants, Department of Mathematics, Utah State University, Logan, UT 11/03 – 8/06

- Supervised the development, evaluation, and dissemination of the eNLVM.
- Made presentations to school district officials, principals, and teachers.
- Taught Math 4620 – Computer Aided Mathematics for Secondary Teachers and arrange clinical teaching opportunities for students.
- Supervised math education student teachers.
- Collaborated with researchers at the Math Forum on the Math Tools Digital Library.

Senior Research Associate

National Library of Virtual Manipulatives (NLVM) and Math Tools Digital Library NSF Grants, Department of Mathematics, Utah State University, Logan, UT 7/00 – 11/03

- Designed, developed, and maintained a web site that hosts Java applets for mathematics and instructional activities that support the NCTM K-12 standards.
- Worked with publishers to create web sites and CD-ROMs that tailor the delivery of applets for use with specific text books.
- Taught two semesters of college algebra; one semester using intelligent tutoring system software.

Course Developer and Instructor

Educational Technology Masters Degree Program, Department of Instructional Technology, Utah State University, Logan, UT 11/99 – 7/00

- Developed web-based materials for, and taught a distance education course to 50 public school teachers located across Utah.
- Developed database web applications for and conducted research that compared two methods of web-based instruction.

Technical Documentation Department Manager

NextPage LC, Provo, UT 10/98 - 11/99

- Insured that schedules and customer requirements were met by managing day-to-day department processes.
- Led the creation, use, and maintenance of department standards and procedures.
- Communicated with developers and other departments to learn requirements and establish schedules and specifications.

- Personally created large portions (800+ pg.) of the documentation, sample files, and code samples for a major software release (LivePublish 2.0).
- Programmed code samples and documented C++ programming interfaces that allow programmers to customize the integration of the NextPage electronic publishing software with Web servers.

Software Development Kit Documentation Team Lead

OpenMarket Inc., Provo, UT 8/95 - 10/98

- Led a group of technical writers in creating the documentation for a major commercial product's C, and Rapid Application Development level SDKs (Folio 4.0 Integrator).
- Planned, designed, produced, and maintained White Papers, Reference Manuals, Sample Code, and Programmer's Guides (2000+ pg.).
- Designed and carried out a documentation evaluation involving customer surveys and usability studies.
- Programmed Windows applications, custom controls, and document conversion filters, Web server extensions, and HTML / DHTML / JavaScript pages.
- Maintained relationships, communication, and a high level of productivity and work quality while telecommuting from my home in Logan, UT.

Graduate Assistant

Dr. Robert Heal, Dr. Larry Cannon, Utah State University Math Department, 9/95 - 8/97

- Designed and programmed interactive math testing shells that evaluate students not only on their answers but also on the steps they take to solve problems.

Graduate Research Assistant

Dr. Andrew S. Gibbons, Utah State University Instructional Technology Department, 9/95 - 6/96

- Worked with Dr. Gibbons to design and program a simulation and expert system for use in researching feedback as an instructional feature.

Senior Documentation Developer

Folio Corporation, Provo, UT 3/94 - 8/95

- Wrote a Design Guide, Reference Manual, and Tutorial for use in learning to create electronic documentation (300+ pg.).
- Prepared manuals for print using page layout and indexing software.
- Presented workshops and other presentations at company and industry conferences.

Technical Trainer and Courseware Developer

Folio Corporation, Provo, UT 6/93 - 3/94

- Developed and produced courseware for use in corporate instructor-led training.
- Taught on-site training at corporations in the United States, Germany, and Brazil.
- Customized courseware to meet the needs of specific customers.

Software Quality Assurance Engineer

Folio Corporation, Provo, UT 9/92 - 6/93

- Tested major portions of a large-scale software release (Folio VIEWS 3.0).
- Programmed testing scripts for use in regression and limits testing.

AWARDS

1 year Presidents Graduate Fellowship Award, Utah State University

4 year Physics Departmental Scholarship, University of Utah

GRANTS AND CONTRACTS

Extending and Enhancing the National Library of Virtual Manipulatives as a National Teaching Resource for School Mathematics, \$777,525

National Science Foundation.

Co-Principal Investigator, 2004-2006.

Collaborated with Co-Pi's and sub-contractors to conceptualize and write proposal. Created prototype that was included with the proposal. Hire and manage students.

Utah Math Endorsement Project \$767,000

Utah State Office of Education.

Senior Research Associate, 2004-2007.

Participated in discussions preparatory to writing grant proposal. Consulted with professors on technology selection and implementation. Will teach a distance education course titled Computer Aided Mathematics for Secondary Teachers.

Today's Mathematics, Interactives CD, Royalties

John Wiley and Sons, Inc., Hoboken, NJ.

Lead Developer, 2005.

Developed CD-ROM that accompanies Today's Mathematics (Heddens & Speer, 2005).

Maine's Impact Study of Technology in Mathematics

Maine Department of Education (DOE), Maine Education Policy Research Institute (MEPRI) and the Education Development Center (EDC) in Boston, MA

Online Assessment Technology Developer, 2004

Worked with educators and evaluators to design applets for use in online assessments. Created applets and customized a web-based application to deliver online assessment and facilitate analysis of gathered data.

Danish Version of the National Library of Virtual Manipulatives, \$6,000

Forlag Malling Beck.

Project Manager, 2004.

Oversaw programmer work and coordinated communication with translators to create a Danish version of the National Library of Virtual Manipulatives.

Using the NLVM to Develop and Validate Library Services for Math Tools Digital Library, \$75,000

National Science Foundation (Subcontract to Math Tools Digital Library).

Researcher Associate, 2002-2004.

Worked with Math Forum researchers to make National Library of Virtual Manipulatives resources accessible through the Math Tools Digital Library.

A National Library of Virtual Manipulatives, \$1,209,000

National Science Foundation.

Senior Research Associate, 1999 - 2003.

Developed a web site containing approximately 100 interactive java applets and accompanying activities and teacher guides for teaching K-8 mathematics.

Customizing Mathlets for Translation to Hebrew and Arabic, \$2,000

Dwalej, Technology.

Chief Architect, 2002-2003.

Modified core libraries and individual applets in the National Library of Manipulatives and collaborated with translators to create Hebrew and Arabic versions of applets.

Customization of National Library of Virtual Manipulatives, Royalties

Britannica Schools Online.

Developer, 2002.

Provided and updated applets for inclusion in the Britannica Schools Online web site.

Heart of Mathematics: Interactive Manipulatives CD-ROM, Royalties

Key College Publishing-Springer-Verlag of New York.

Head Developer, 2002.

Updated CD-ROM that accompanies Heart of Mathematics: An Invitation to Effective Thinking (Berger & Peterson, 2000).

Math for Elementary Educators: Interactive Manipulatives, Royalties

John Wiley and Sons, Inc., New York.

Lead Developer, 2003.

Worked with math professors and authors to design and develop a companion website for Math for Elementary Educators: A Contemporary Approach.

Multimedia CD-ROM Curriculum for Precalculus, \$396,000

Utah State Higher Education Technology Initiative.

Developer, 1995-1997.

Collaborated with professors of mathematics to design and create a CD-ROM containing instructional software to support the instruction of College Algebra.

PUBLICATIONS

- Duffin, J., Muramatsu, B. (June, 2008). *OER Recommender: Linking NSDL Pathways and OpenCourseWare repositories*. JCDL 2008.
- Cannon, L., Duffin, J., Heal, R. (2005). *Today's mathematics: Interactives CD*. A collection of interactive math applets on CD-ROM that accompany the text Today's Mathematics, 11th Edition, John Wiley & Sons, Hoboken, NJ, Copyright 2005.
- Cannon, L., Duffin, J., Heal, R., Wellman, R. (2004). *Heart of mathematics: Interactive explorations*. A collection of interactive math applets on CD-ROM that accompany the text The Heart of Mathematics: An invitation to effective thinking, 2nd Edition, Key College Publishing, Emeryville, CA, Copyright 2004.
- Cannon, L., Dorward, J., Duffin, J., Heal, R., (2003). *The National Library of Virtual Manipulatives for Interactive Mathematics*. <http://nlvm.usu.edu/>
- Cannon, L., Cannon, E., Duffin, J., Heal, R., Wellman, R. (2002). *Mathematics for elementary teachers: Interactive manipulatives*. A collection of interactive math applets on CD-ROM that accompany the text Mathematics for Elementary Teachers: A Contemporary Approach, 6th Edition, John Wiley and Sons, Inc., New York, Copyright 2002.
- Duffin, J. (2003). *Theory for authoring tools that support teacher adaptation of mathlets*. Unpublished doctoral dissertation, Utah State University. Available at: <http://matti.usu.edu/duffin/diss/jd-diss.pdf>
- Gibbons, A. S., Lawless, K. A., Anderson, T. A., & Duffin, J. (2001). The web and model-centered instruction. In B. H. Khan (Ed.), *Web-based training* (pp. 137-146) Englewood Cliffs, NJ: Educational Technology Publications.
- Gibbons, A. S., Robertson, D. J., Duffin, J., & Thompson, B. (2001). Effects of administering feedback following extended problem solving. *Journal of Educational Computing Research*, 25(4). Amityville, New York: Baywood Publishing Company.
- Duffin, J. W. (1997). *Instructional math testing software*. Unpublished master degree project proposal and summary. Utah State University. Available at: <http://matti.usu.edu/duffin/masters/jd-msproject.pdf>

PRESENTATIONS

- Duffin, J. (September, 2006). When teachers reuse and remix interactive online resources. *Open Education 2006*. Logan, UT.
- Duffin, J., Jorgensen, J. (March, 2006). Interactive online learning activities. *Utah Coalition for Education Technology*. Riverton, UT
- Duffin, J. (December, 2005). Utilizing virtual manipulatives in math teaching. Invited presenter. *Core Academy Follow Up Meeting*. Logan, UT.
- Duffin, J. (November, 2005). Effective use of virtual manipulatives in secondary math education. Guest lecture. *ELED 4630: Middle Level Math Methods*. Utah State University, Logan, UT.

- Duffin, J. (November, 2005 & 2004). Extending and enhancing the national library of virtual manipulatives. Guest lecture. *INST 6480: Instructional Simulations*. Utah State University, Logan, UT.
- Duffin, J. (November, 2005). Using graphing calculators and sensors in math teaching. *South Cache 8/9 Center Math Department Meeting*. Hyrum, UT.
- Duffin, J., & Scofield, D. (August, 2005). An introduction to the eNLVM. *Virtual ToolFest, August '05*. <http://mathforum.org/mathtools/newsletter/2005/August.html>
- Duffin, J. (2005). Extending and enhancing the national library of virtual manipulatives. *Cache District Principals Meeting, Willow Valley Middle School Math Department Meeting, Millville Elementary Faculty Meeting, Logan School District Math Vertical Integration Team Meeting, Adams Elementary Faculty Meeting, Edith Bowen Inservice Training, Logan High Math Department Meeting*. Cache Valley, UT.
- Duffin, J. (June, 2005). Extending and enhancing the national library of virtual manipulatives. *Math Intervention Workshop*. Logan, UT.
- Duffin, J. (August, 2004). Teachers assistant for the design of interactive online resources. *ToolFest '04*. Drexel University, Philadelphia, PA.
- Duffin, J., & Dorward, J. (February, 2004). Interactive online resources for mathematics. *Utah Association of Mathematics Teacher Educators*. Salt Lake City, UT.
- Heal, R., & Duffin, J. (March, 2004). Workshop: Adapting interactive online resources for mathematics. *The Mathematical Association of America Intermountain Section Meeting*. Weber State University, Ogden, UT.
- Heal, R., & Duffin, J. (October, 2003). Virtual manipulatives: where are we now, and where are we going? *National Council of Teachers of Mathematics Western Regional Conference*. Salt Lake City, UT.
- Duffin, J. (August, 2003). Theory for authoring tools that support teacher adaptation of mathlets. *15th Annual Institute of Instructional Technology*, Utah State University. Logan, UT.
- Duffin, J. (June, 2003) Using virtual manipulatives in teaching. NASA Faculty Institute. Hampton, VA.
- Duffin, J. (September, 2002). John R. Anderson and the ACT theories of cognition. Invited guest lecture presented to a class on learning theory at Utah State University, Logan, UT.
- Duffin, J. (June, 2002) The national library of virtual manipulatives. NASA Faculty Institute. Hampton, VA.
- Duffin, J. W., & Gibbons, A. S. (August, 2001). Decompressing and aligning the structures of CBI design. *IEEE International Conference on Advanced Learning Technologies*. Madison, WI.
- Gibbons, A. S., & Duffin, J. W. (August, 2001). Understanding designs and improving design process with a layered approach. *17th Annual Conference on Distance Teaching & Learning*. Madison, WI.

- Duffin, J. W. (March, 2001). Conducting educational research in a web environment. *Intermountain Paper Symposium*, Utah State University. Logan, UT.
- Gibbons, A. S., Duffin, J. W. & Robertson, D. (August, 1998). Intelligent agents in model-centered instruction. Presented at the *Instructional Technology 10th Annual Summer Institute*. Utah State University, Logan, UT.
- Gibbons, A. S., Duffin, J., Robertson, D. J. & Thompson, B. (April, 1998). Effects of Administering Feedback Following Extended Problem Solving. *Annual Meeting of the American Educational Research Association*. San Diego, CA.
- Gibbons, A. S., Duffin, J., Robertson, D. J. & Thompson, B. (October, 1997). Instructional Feedback and Simulation: A Model-Centered Approach. *Annual meeting of the Northern Rocky Mountain Educational Research Association*. Jackson, WY.
- Duffin, J. W. & Gibbons, A. S. (August, 1997). Intelligent interactive math testing shells. Presented at the *Instructional Technology 9th Annual Summer Institute*. Utah State University, Logan, UT.
- Gibbons, A. S. & Duffin, J. W. (August, 1996). Programming feedback for simulation-based instruction. Presented at the *Instructional Technology 8th Annual Summer Institute*. Utah State University, Logan, UT.
- Gibbons, A. S., Drake, L. & Duffin, J. W. (October, 1995). Scaffolding learning through computer-based shells. Colloquium of the *USU Student Chapter of the Association for Communications Technology*. Logan, UT.
- Duffin, J. W. (1995, 1996, & 1997). Folio integrator SDK workshops and presentations. *Folio Corporation's Annual Conference*.

TEACHING EXPERIENCE

Taught two semesters of Computer Aided Mathematics for Secondary Teachers at Utah State University.

Taught two semesters of College Algebra at Utah State University.

Taught a semester long web-based course for Utah State University to 50 Utah public school teachers.

Taught training courses to developers of electronic documentation for 1 year as a technical trainer for Folio Corporation.

Helped teach a class on instructional simulations at Utah State University.

SERVICE

Proposal Reviewer, June 2005

Joint Conference on Digital Libraries

Student Teaching Advisor, Fall 2004 – Spring 2006

College of Education, Utah State University

Updated 21 July 2008

Concurrent Session Coordinator, Conference Organizing Committee, Fall 2002
15th Annual Instructional Technology Institute, Utah State University

TECHNICAL SKILLS

Proficiently program using Ruby on Rails, Java (Servlets, JSP, Applications, and Applets), PHP, JavaScript, HTML, XML, C, C++, Windows API, Visual Basic and SQL (Postgres & MySQL).

Plan, design, and manage large development projects.

Design, develop, and evaluate web-based instruction.

Design and program intelligent tutoring systems.

CURRENT AND RECENT PROFESSIONAL AFFILIATIONS

American Association of Educational Researchers

International Artificial Intelligence in Education Society

National Council of Teachers of Mathematics

The Mathematical Association of America

Utah Association of Mathematics Teacher Educators