

David C. Webb

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Education

- Ph.D. 2001** University of Wisconsin-Madison Curriculum & Instruction (Math Ed.)
Thomas A. Romberg, Advisor Minor: Educational Administration
- M.A. 1994** University of California, Santa Barbara Education (Confluent/Math Education)
Honors: UCSB Chancellor's Grant
- B.Sc. 1988** University of California, Los Angeles Applied Mathematics
Honors: Chancellor's Marshall, Golden Key and Phi Eta Sigma Honor Societies

Professional Positions

University Positions

- 2005–present, Assistant Professor, University of Colorado at Boulder
2003–present, Executive Director, Freudenthal Institute-USA
2003–2005, Associate Researcher, University of Wisconsin-Madison
2003–2004, Lecturer, Curriculum and Instruction, University of Wisconsin-Madison
2001–2003, Assistant Researcher, University of Wisconsin-Madison
1995–2001, Project Assistant, University of Wisconsin-Madison
1996–1997, University Supervisor, Secondary Mathematics, University of Wisconsin-Madison

Secondary and Middle Grades Mathematics Teaching

- 1992–1995, La Colina Middle School, Santa Barbara, California
1989–1992, Narbonne High School, Los Angeles, California

Courses Taught (+ = co-taught; **Bold** = developed original syllabus)

- EDUC 5317** Nature of Mathematics/Math Education (Fall '05, '06, '07, '08)
EDUC 5375 Methods & Materials in Secondary Mathematics (Spr '06)
EDUC 5706 Assessment in Math & Science Education (Spr '07, '08)
EDUC 6804+ BPEME: Mathematical Understanding (Sum '08)
EDUC 6804+ BPEME: Algebraic Reasoning (Sum '07)
EDUC 6804+ BPEME: Proportional Reasoning (Sum '06)
EDUC 8804+ Advances in the Assessment of Student Learning (Fall '06, '08)

Publications (* = peer reviewed)

- * Webb, D. C. (in preparation). Design considerations for a professional development program to support teachers' formative assessment practices. *Educational Designer*.
- * Ioannidou, A., Repenning, A., & Webb, D. C. (in review). Using Scalable Game Design to Promote 3D Fluency: Assessing the AgentCubes Incremental 3D End-User Development Framework. *Journal of Visual Languages and Computing* (selected for Aug 2009 Special Issue)

- Webb, D. C. (in press). Design Principles for Professional Development: What Should Teachers Know about Mathematics in Context? In M.R. Meyer, C. Langrall, D.C. Webb & F. Arbaugh (Eds.) (in press). *Lessons Learned in Implementing Mathematics Curricula: Ten Years of the ShowMe Project*. Charlotte, NC: Information Age Publishing, Inc. [anticipated publication Dec 2008]
- Meyer, M.R., Langrall, C., Webb, D.C., & Arbaugh, F. (Eds.) (in press). *Lessons Learned in Implementing Mathematics Curricula: Ten Years of the ShowMe Project*. Charlotte, NC: Information Age Publishing, Inc. [anticipated publication Dec 2008]
- * Webb, D. C., Boswinkel, N., & Dekker, T. (2008). Beneath the Tip of the Iceberg: Using Representations to Support Student Understanding. *Mathematics Teaching in the Middle School*, 14(2), 110-113.
- Webb, D.C., & Meyer, M.R. (2007). The Case of Mathematics in Context. In Christian Hirsch (Ed.), *Perspectives on Design and Development of School Mathematics Curricula* (pp. 81 – 94). Reston, VA: NCTM.
- * Webb, D. C., Romberg, T. A., Burrill, J., & Ford, M. J. (2005). Teacher Collaboration: Focusing on Problems of Practice. In T. A. Romberg & T. P. Carpenter (Eds.), *Understanding Math and Science Matters* (pp. 231-251). Mahwah, NJ: Lawrence Erlbaum Associates.
- Webb, D. C. (2004). Enriching Assessment Opportunities Through Classroom Discourse. In T. A. Romberg (Ed.), *Standards-Based Mathematics Assessment in Middle School: Rethinking Classroom Practice* (pp. 169-187). New York: Teachers College Press.
- Webb, D. C., Romberg, T. A., Dekker, T., de Lange, J., & Abels, M. (2004). Classroom Assessment as a Basis for Teacher Change. In T. A. Romberg (Ed.), *Standards-Based Mathematics Assessment in Middle School: Rethinking Classroom Practice* (pp. 223-235). New York: Teachers College Press.
- Her, T., & Webb, D. C. (2004). Retracing a Path to Assessing for Understanding. In T. A. Romberg (Ed.), *Standards-Based Mathematics Assessment in Middle School: Rethinking Classroom Practice* (pp. 200-220). New York: Teachers College Press.
- * Dekker, T., & Webb, D. C. (2004). Toetsen op niveau [Higher level tests]. *Tijdschrift voor Didactiek der B-wetenschappen* [Journal for Instructional Science], 21(1).
- Webb, D. C., & Meyer, M. R. (2002). *Summary report of achievement data for Mathematics in Context: A Connected Curriculum for Grades 5–8*. Madison, WI: Wisconsin Center for Education Research.
- * Webb, D. C., & Dekker, T. (2002). Classroom Assessment as a Basis for Teacher Change (CATCH). In D. S. Mewborn, Sztajn, P., White, D. Y., Wiegel, H. G., Bryant, R. L., & K. Nooney (Eds.), *Proceedings of the twenty-fourth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol. II, pp. 599-609). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.
- Burrill, J., Feijs, E., Meyer, M., van Reeuwijk, M., Webb, D., & Wijers, M. (2001). *The role of assessment in Standards-Based Middle School Mathematics Curriculum Materials*. St. Louis, MO: Show-Me Center.
- Dekker, T., Querelle, N., Meyer, M. R., Webb, D. C., Shafer, M. C., Burrill, J., & Pligge, M. A. (2000). *Balanced Unit Assessments* (Grades 5–8). Chicago: Encyclopaedia Britannica, Inc.
- * Webb, D. C., & Romberg, T. A. (1998). Preliminary results of an assessment using NAEP and TIMSS mathematics items for program evaluation. In S. B. Berenson, Dawkins, K.R., Blanton, M., Coulombe, W.N., Kolb, J., Norwood, K., & L. Stiff (Eds.), *Proceedings of the twentieth Annual*

Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. I, pp. 220). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.

- * Brenner, M.E., Mayer, R. E., Moseley, B., Duran, R., Brar, T., Smith, B. R., & Webb, D. (1997). The Role of Multiple Representations in Learning Algebra. *American Educational Research Journal*, 34(4), 663-689.
- * Webb, D.C., & Wortham, D.W. (1996). A Comparative Study of Two Remediation Strategies for Proportion Problems. In E. Jakubowski, D. Watkins, and H. Biske (Eds.), *Proceedings of the eighteenth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 330-335) Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Science.

Funded Activities

- Principal Investigator on NSF CCLI proposal, "Developing Adult Learners' Profound Understanding of Algebra" \$200,000 over 2 years (Pending).
- Principal Investigator on IES Technology Development proposal, "Development of a Digital Math Environment to Optimize Fluency in Rational Number" \$1,398,683 over 3 years (Pending).
- Co-PI on NSF ITEST award, DR-12 proposal, "Strategies: Reforming IT Education through Game Design: Integrating Technology-Hub, Inner City, Rural and Remote Regions" \$ 1,499,425 over 3 years (PI Alex Repenning, co-PI Jeff Kidder), 1/1/2009 – 12/31/2011.
- Co-PI on NSF Noyce award, "STEM Colorado/Noyce Teacher Scholarship Program" \$500,000 over 4 years (PI Valerie Otero, co-PIs Mike Klymkowsky, Noah Finkelstein, Steven Pollock), 1/1/2009 – 12/31/2012.
- Co-PI on grant proposal awarded by the National Math and Science Initiative/Exxon Mobil : "CU-Teach" \$2.4 million total award, 11/15/2007-10/31/2012 (PI Valerie Otero; co-PIs Mike Klymkowsky and Jennie Whitcomb)
- Principal Investigator on award from University of Utrecht: "Freudenthal Institute USA." 200.000 euros total award, 4/1/2007-3/31/2012
- Principal Investigator on subcontract award from NSF Show-ME Center II: "Studies of Professional Development and Methods for Assessing Student Understanding in the Middle Grades." \$68,939 total award, 8/15/2005-6/30/2007
- Co-PI on grant proposal awarded by the Colorado Department of Education: "Boulder Partnership for Excellence in Mathematics Education" \$600,000 total award, 3/1/2006-2/28/2009. PI Bee Wallace (BVSD), co-PIs D.C.Webb, Jim Curry (Appl Math), & Truus Dekker (Freudenthal Inst).
- Principal Investigator on contract award from DPS Math/Special Education department: "Impact of Dynamic Math Applets on Student Learning and Achievement." Supporting the study of the first US implementation of the Freudenthal Institute's Digital Math Environment in two underperforming middle schools in Denver. \$5000 total, December 2007. This award was also designed to support the preparation of an IES Tech Development proposal submitted June 2008.
- Principal Investigator on seed grant award from Front Range Community College "Development of a transformed College Algebra unit for exponential and logarithmic functions" \$1500 total award, October 2006. This award was also designed to support the preparation of a NSF CCLI Phase I grant proposal, submitted May 2007 with favorable reviews and resubmitted in May 2008.

Selected Professional Activities

Executive Director, Freudenthal Institute USA (2003 – present)

Coordinator of the 1st International Realistic Mathematics Education conference (Nov 14 - 15, 2005), Madison, WI. Attended by 120+ university faculty, state and district administrators, graduate students, and teachers from the United States, Canada, Great Britain, Italy and the Netherlands.

Member (2007), Boulder Valley Mathematics and Science Graduation Task Force, Boulder, CO.

Consultant (2004-2007), The El Paso Collaborative for Academic Excellence, to support the development, field testing, scoring, analysis, and revision of algebra assessments that will be used as both a placement exam for local colleges and also as a summative exam for high school Algebra 2 courses.

Reviewer for *Journal for Teacher Education*, *Journal for Research in Mathematics Education*, *American Education Research Journal*, *Mathematics Teaching in the Middle School*, *Mathematics Teacher*, and professional conferences (e.g., PME-NA, AERA, and others)

Mathematics Content Review Panel for “Studies of Enacted Curriculum” project, *Cyberchase* television series, and the Annenburg professional development video series for algebra

U.S. Item Selection, OECD Programme for International Student Assessment

Co-chair, Division C, Section 2, AERA Annual Convention (1998)

Conference Presentations

Ioannidou, A., Repenning, A., & Webb, D. C. (2008, September). *Using Scalable Game Design to Promote 3D Fluency: Assessing the AgentCubes Incremental 3D End-User Development Framework*. Paper presented at the IEEE Symposium on Visual Languages and Human-Centric Computing, Herrsching am Ammersee, Germany

Webb, D. C. (2008, August). *Progressive Formalization as an Interpretive Lens for Increasing the Learning Potentials*. Poster presented at the Biennial Joint European Association for Research in Learning and Instruction/Northumbria SIG Assessment Conference, Potsdam, Germany.

Webb, D. C. (2008, July). Presentation at the International Society for Design and Development in Education Conference. Egmond aan Zee, Netherlands.

Webb, D. C. (2007, August). *Assessment as a Means to Improve Potentials of Student Learning*. Paper presented at the Annual Meeting of the European Association for Research in Learning and Instruction, Budapest, Hungary.

Webb, D. C. (2007, April). *Beneath the Tip of the Iceberg: Representational Pathways to Increase Student Access to Mathematics*. Invited Keynote for the 2nd Annual National Mathematics Recovery Conference, Westminster, CO.

Webb, D. C. (2006, April). *The Use of Models in Realistic Mathematics Education to Develop Children's Number Sense*. Invited Presentation for the National Mathematics Recovery Conference, Westminster, CO.

Webb, D. C. (2006, September). *Using Models to Develop Children's Number Sense*. Presentation for the Colorado Council of Teachers of Mathematics Conference, Denver, CO.

Webb, D. C. (2006, October 20). *Tools for Teachers: Success for Students*. Presentation for the Northwest Mathematics Conference, Victoria, BC, Canada.

- Webb, D. C. (2006, October 24). *Using pre-formal mathematics to support students with special needs*. Invited Presentation for the Colorado Metro Math Intervention Team, Boulder, CO.
- Webb, D. C. (2005, November). *Assessing realistic mathematics education*. Presentation for the Realistic Mathematics Education Conference, Madison, WI.
- Webb, D. C. (2005, April). *Tools to promote algebraic reasoning and relational thinking*. Presentation for the Annual Meeting of the National Council for Teachers of Mathematics, Anaheim, CA.
- Webb, D. C. (2005, April). *The impact of a standards-based curriculum, Mathematics in Context: The final results*. Presentation for the Research Pre-session of the National Council for Teachers of Mathematics, Anaheim, CA.
- Rubinstein, D., & Webb, D. C. (2005, April). *Creating a district assessment plan that supports growth in teachers' classroom assessment practices*. Presentation for the Annual Meeting of the National Council for Supervisors of Mathematics, Anaheim, CA.
- Webb, D. C. (2004, August). *What we've learned about student learning*. Invited keynote address for the Washington State Regional Conference for MiC, North Thurston, WA.
- Webb, D. C. (2004, July). *Classroom assessment as a research context: Variations on a theme of pedagogical decision making*. Invited paper presented at the International Congress on Mathematics Education, Copenhagen, Denmark.
- Webb, D. C. (2004, April). *Understanding classroom assessment: Assessing student understanding*. Presentation for the Annual Meeting of the National Council for Teachers of Mathematics, Philadelphia, PA.
- Webb, D. C., Rubinstein, D., Shinnars, G. (2004, April). *Supporting teacher change in classroom assessment*. Presentation for the Annual Meeting of the National Council for Supervisors of Mathematics, Philadelphia, PA.
- Webb, D. C. (2003, April). *Beyond reproduction: Assessing students' understanding*. Presentation at the Annual Meeting of the National Council for Teachers of Mathematics, San Antonio, TX.
- Webb, D. C. (2002, May). *The state of mathematics: An international perspective*. Invited plenary for the South Milwaukee Conference on Mathematics, Alverno College, Milwaukee, WI.
- Meyer, M. R., & Webb, D. C. (2002, April). *Beyond belief: Rethinking classroom assessment practices*. Presentation at the Annual Meeting of the National Council for Teachers of Mathematics, Las Vegas, NV.
- Webb, D. C. (2001, August). *Classroom assessment strategies to help all students master rigorous mathematics*. Co-presenter for a four-day workshop for District of Columbia Public School mathematics teachers, American Association for the Advancement of Science, Washington, DC.
- Webb, D. C. (2000, June). *Using a multi-dimensional assessment system to evaluate the impact of a Standards-based mathematics curriculum on student achievement*. Paper presented at the Council of Chief State School Officers 30th Annual National Conference on Large-Scale Assessment, Snowbird, UT.
- Webb, D. C. (2000, April). *Variations in teachers' classroom assessment practices*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.
- Webb, D. C. (2000, April). *Enriching opportunities for assessment through classroom discourse*. Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

- Webb, D. C., Greenlaw-Meyer, M., Her, T. (2000, April). *Toward classroom assessment strategies that promote student understanding*. Interactive poster session presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.
- Wortham, D. W., Webb, D. C., & Atkinson, R. K. (1997, April). *Effects of two instructional treatments on student solutions to missing-value proportion problems*. Paper presented at the annual conference of the American Educational Research Association, Chicago, IL.

Selected Technical Reports and Working Papers

- Webb, D.C. (2007). FITness through AgentCubes: Game design as a problem context to improve middle school students' fluency with information technology [Evaluation Report for the Fall 2007 pilot study of AgentCubes]. Boulder, CO.
- Romberg, T.A., Webb, D. C., Folgert, L., Shafer, M. C. (2005). Measures of student performance (Monograph #4, MiC Longitudinal Cross-Sectional Study). Madison, WI: University of Wisconsin-Madison.
- Romberg, T.A., Webb, D. C., Folgert, L., Shafer, M. C. (2005). The Impact of MiC on Student Achievement (Monograph #5, MiC Longitudinal Cross-Sectional Study). Madison, WI: University of Wisconsin-Madison.
- Romberg, T.A., Webb, D. C., Folgert, L., Shafer, M. C. (2005). Differences in Performance Between Mathematics in Context and Conventional Students (Monograph #6, MiC Longitudinal Cross-Sectional Study). Madison, WI: University of Wisconsin-Madison.
- Shafer, M. C., Marten, B., Webb, D., Folgert, L., & Davis, J. (2003) *Instruction for 1997-1998* (Working Paper #30, MiC Longitudinal Cross-Sectional Study). Madison, WI: University of Wisconsin-Madison.
- Shafer, M. C., Folgert, L., Webb, D., Kwako, J., Lee, C., & Wagner, L. (2003) *School Capacity for 1999-2000* (Technical Report #29, MiC Longitudinal Cross-Sectional Study). Madison, WI: University of Wisconsin-Madison.
- Webb, D. C., Ford, M. J., Burrill, J., Romberg, T. A., Reif, J., & Kwako, J. (2001) *Verona Middle School Design Collaborative: Year 3 Student Achievement Technical Report*. Madison, WI: National Center for Improving Student Learning and Achievement in Mathematics and Science.
- Webb, D. C., Burrill, J., Romberg, T. A., Ford, M. J., Kwako, J., & Reif, J. (2001). *Verona Middle School Design Collaborative: Year 2 Student Achievement Data Technical Report*. Madison, WI: National Center for Improving Student Learning & Achievement in Mathematics & Science, Wisconsin Center for Education Research.
- Webb, D. C., Romberg, T. A., & Shafer, M. C. (2001). *Year 1 student performance on an assessment using NAEP and TIMSS items for program evaluation* (Working Paper #16, MiC Longitudinal Cross-Sectional Study). Madison, WI: University of Wisconsin-Madison.
- Webb, D. C. (1998). Curriculum Correlation Summary: *New York City Board of Education Scope and Sequence v. Mathematics in Context*. Chicago, IL: Encyclopaedia Britannica Educational Corporation.
- Webb, D. C. (1998). Correlation analysis: *State of Delaware Mathematics Performance Indicators v. Mathematics in Context*. Chicago, IL: Encyclopaedia Britannica Educational Corporation.
- Webb, D. C. (1997). Curriculum-Assessment Correlation: *Stanford 9 Achievement Test v. Mathematics in Context*. Chicago, IL: Encyclopaedia Britannica Educational Corporation.