Cognitively Guided Instruction: A Selection of Publications November 2010 Compiled by Linda Levi, Teachers Development Group

This is a selection of published work related to Cognitively Guided Instruction. Other sources can be found by looking for other work by these authors and in the reference list of these publications.

- Alexander, C. & Ambrose, R. (August 2010). Digesting student-authored story problems. *Mathematics Teaching in the Middle School.*, 16, (1), 27-33.
- Ambrose, R. (2004). Initiating Change in Prospective Elementary School Teachers' Orientation to Mathematics Teaching by Building on Beliefs. *Journal of Mathematics Teacher Education* 7(2), 91-119
- Ambrose, R., Baek, J., Carpenter, T. P., (2003). Children's Invention of Multiplication and Division Algorithms, in Baroody, A. and Dowker (Eds.) *The Development of Arithmetic Concepts and Skills: Recent Research and Theory*. Mahwah, NJ: Erlbaum.
- Ambrose, R. & Kenehan, G. (2009). Children's Evolving Understanding of Polyhedra in the Classroom, *Mathematical Thinking and Learning*, Vol 11 (3), 158 176.
- Ambrose, R. & Molina, M. (in press). First-grade Latino English Language Learners' performance on story problems in English versus Spanish. *Canadian Journal of Science, Mathematics and Technology Education*.
- Battey, D. & Chan, A. (2010). Building community and relationships that support critical conversations on race: The case of Cognitively Guided Instruction. In M. Q. Foote (Ed.), *Mathematics Teaching & Learning in K-12: Equity and Professional Development*. New York: Palgrave.
- Battey, D. & Franke, M. L. (2008). Transforming identities: Understanding teachers across professional development and classroom practice. *Teacher Education Quarterly*, *35*(3), 127-149.
- Battey, D. & Stark, M. (2009). Equitable classroom practices: Avoiding ability attributions from misconceptions in mathematics. In C. Malloy (Ed.), *Mathematics for All: Instructional Strategies for Diverse Classrooms* (pp. 167-177). Reston, VA: National Council of Teachers of Mathematics.
- Baek, J. M. (2008). Developing algebraic thinking through explorations in multiplication. In C. Greenes (Ed.), Algebra and algebraic thinking in school mathematics: NCTM 2008 Yearbook. Reston, VA: National Council of Teachers of Mathematics.

- Baek, J. M. (2005). Children's mathematical understanding and invented strategies for multidigit multiplication. *Teaching Children Mathematics*, *12*, 242-247.
- Baek, J. (1998). Children's invented algorithms for multidigit multiplication problems. In Morrow, L. (Ed). *The teaching and learning of algorithms in school mathematics* Reston, VA: National Council of Teachers of Mathematics.
- Baek, J. M. & Flores, A. (2005). How does it feel? Teachers count on the alphabet, instead of numbers. *Teaching Children Mathematics*, 12, 54-59.
- Behrend, J. L. (2003). Learning-Disabled students make sense of mathematics. *Teaching Children Mathematics*, *9*(1), 269-273.
- Behrend, J. L. (2001). Are rules interfering with children's mathematical understanding? *Teaching Children Mathematics*, 8(1), 36-40.
- Behrend, J. L. & Mohs, L. C. (2005/2006). From simple questions to powerful connections: A two-year conversation about negative numbers. *Teaching Children Mathematics*, 12(5), 260-268.
- Carpenter, T. P., Ansell, E., Franke, M. L., Fennema, E., & Weisbeck, L. (1993). Models of problem solving: A study of kindergarten children's problem-solving processes. *Journal for Research in Mathematics Education*, 24(5), 428-441.
- Carpenter, T. P., Fennema, E., Franke, M. L. (1999). Cognitively Guided Instruction: A knowledge base for reform in primary mathematics instruction. *The Elementary School Journal*, *97*(1), 3-20.
- Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L, Empson, S. B. (1999). *Children's mathematics: Cognitively guided instruction*. Portsmouth, NH: Heinemann.
- Carpenter, T. P., Fennema, E., Peterson, P. L., Chiang, C.P., & Loef, M. (1989). Using knowledge of children's mathematics thinking in classroom teaching: An experimental study. *American Educational Research Journal*, *26* (4), 385-531.
- Carpenter, T.P., Franke, M. L., Jacobs, V. R., Fennema, E., and Empson, S. B. (1998). A longitudinal study of invention and understanding in children's multidigit addition and subtraction. *Journal for Research in Mathematics Education*, 29(1), 3-20.
- Carpenter, T. P., Franke, M. L., & Levi, L. (2003). *Thinking mathematically: Integrating arithmetic & algebra in elementary school*. Portsmouth, NH: Heinemann.
- Carpenter, T. P., Levi, L., Franke, M. L., Zeringue, J. K. (2005). Algebra in the Elementary School: Developing Relational Thinking. *ZDM The International Journal on Mathematics Education*, *37*(1)

- Carpenter, T. P., and Moser, J. M. (1984). The Acquisition of Addition and Subtraction Concepts in Grades One through Three. *Journal for Research in Mathematics Eduaction*, 15(3), 179-202.
- Chan, A.G. (2010). Identity and practice: Preservice teacher learning within a practice-based mathematics methods course. Unpublished doctoral dissertation, University of California, Los Angeles.
- Empson, S. B. (2003). "Low-Performing Students and Teaching Fractions for Understanding: An Interactional Analysis." *Journal for Research in Mathematics Education* 34: 4–305-343.
- Empson, S.B., (2001). "Equal Sharing and the Roots of Fractions Equivalence." *Teaching Children Mathematics* 7: 421-25.
- Empson, S.B., (1999) "Equal Sharing and Shared Meaning: The Development of Fraction Concepts in a First-Grade Classroom." *Cognition and Instruction* 17: 283-342.
- Empson, S. B. (1995). Using sharing situations to help children learn fractions. *Teaching Children Mathematics*, 2(2), 110-114.
- Empson, S. B. & Jacobs, V. J. (2008). Learning to Listen to Children's Mathematics. In T. Wood (Series Ed.) & P. Sullivan (Vol. Ed.), *International handbook of mathematics teacher education, vol.1: Knowledge and beliefs in mathematics teaching and teaching development* (pp. 257-281). Rotterdam, the Netherlands: Sense Publishers.
- Empson, S. B., Junk, D., Dominguez, H., and Turner, E. (2006). "Coordination of Multiplicatively Related Quantities: A Cross-Sectional Study of Children's Thinking." *Educational Studies in Mathematics*.
- Empson, S. B. & Knudsen, J. (2003). Building on Children's Thinking to Develop Proportional Reasoning. *Texas Mathematics Teacher*, *L*(2), 16-21.
- Empson, S. B., and Levi, L. (2011) *Extending Children's Mathematics: Fractions and Decimals*. Portsmouth, NH: Heinemann.
- Empson, S. B., Levi, L., and Carpenter, T. P. (2010) The algebraic nature of fractions: developing relational thinking in elementary school in J Cai and E. Knuth (Eds) *Early Algebraization: Cognitive, Curricular and Instructional Perspectives.* New York: Springer
- Enyedy, N., Wischnia, S. & Franke, M. (2008). Classroom discourse: Contrastive and Consensus conversations. *Journal of Educational Research*, (2) 2./3.
- Falkner, K. P., Levi, L., & Carpenter, T.P. (1999). Children's understanding of equality: A foundation for algebra. *Teaching Children Mathematics*, *6*(4), 232-236.

- Fennema, E., Carpenter, T. P., Franke, M. L., Levi, L., Jacobs, V. R., Empson, S. B. (1996). A longitudinal study of learning to use children's thinking in mathematics instruction. *Journal for Research in Mathematics Education*. 27, 4, 403-434.
- Fennema, E., Carpenter, T. P., Jacobs, V. R., Franke, M. L., Levi, L. W. (1998). A longitudinal study of gender differences in young children's mathematical thinking. *Educational Researcher*, 27(5), 4 12.
- Fennema, E., Carpenter, T.P, Levi, L., Franke, M.L. & Empson, S. B. (2000). *Children's Mathematics: Cognitively Guided Instruction: A Guide for Workshop Leaders*. Portsmouth, NH: Heinemann.
- Franke, M.L. (2003). Fostering young children's mathematical understanding. In C. Howes (Ed.) *Teaching 4- to 8-year olds: Literacy, math, multiculturalism, and classroom community.* Baltimore, MD: Brookes.
- Franke, M. L., Carpenter, T. P., & Battey, D. (2007). Content matters: The case of algebraic reasoning in teacher professional development. In J. Kaput, D. Carraher, & M. Blanton, (Eds.) *Algebra in the Early Grades* (pp. 333-359). Hillside, NJ: Lawrence Erlbaum.
- Franke, M. L., Carpenter, T., Fennema, E., Ansell, E., and Behrend, J. (1998). Understanding Teachers' Self-Sustaining, Generative Change in the Context of Professional Development. *Teaching and Teacher Education*, *14* (1), 67-80.
- Franke, M.F., Carpenter, T.P., Levi, L., Fennema, E. (2001) "Capturing Teachers' Generative Change: A Follow-up Study of Professional Development in Mathematics. *American Educational Research Journal* 38 (3), 653-689.
- Franke, M. L. and Kazemi, E. (2001). Learning to Teach Mathematics: Focus on Student Thinking. *Theory Into Practice* 40(2), 102-109.
- Franke, M.L., & Kazemi, E. (2001). Teaching as learning within a community of practice: Characterizing generative growth. In T. Wood, B. Nelson, & J. Warfield (Eds.). *Beyond classical pedagogy in elementary mathematics: The nature of facilitative teaching* (pp. 47-74). Mahwah, NJ: Erlbaum.
- Franke, M. L., Kazemi, E., & Battey, D. (2007). Understanding teaching and classroom practice in mathematics. In F. K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 225-256). Greenwich, CT: Information Age Publishers.
- Franke, M., Kazemi, E., Shih, J., Biagetti, S., & Battey, D. (2005). Changing teachers' professional work in mathematics: One school's journey. In T.A. Romberg, T.P. Carpenter, T. P., & F. Dremock (Eds.) *Understanding mathematics and science matters* (pp. 209-230). Mahwah, NJ: Erlbaum.

- Franke, M., Webb, N., Chan, A., Battey D., Ing, M., Freund, D., De, T. (2009). Eliciting student thinking in elementary mathematics classrooms: Practices that support understanding. *Journal of Teacher Education*.
- Franke, M. L., Webb, N. M., Chan, A., Ing, M., Freund, D., & Battey, D. (2009). Teacher questioning to elicit students' mathematical thinking in elementary school classrooms. *Journal of Teacher Education*, 60(4), 364-379.
- Hiebert, J., Carpenter, T. P., Fennema, E., Fuson, K. C., Wearne, D., Murray, H., Oliver, A., and Human, P. (1997) A day in the life of one Cognitively Guided Instruction Classroom, in Hiebert, et. al., *Making Sense: Teachers and learning mathematics with understanding*. Portsmouth, NH: Heinemann.
- Jacobs, V. R. & Ambrose, R. C. (2008). Making the most of story problems. *Teaching Children Mathematics*, 15, 260–266.
- Jacobs, V. R., Ambrose, R. C., Clement, L., and Brown, D. (2006). Using Teacher-Produced Videotapes of Student Interviews as Discussion Catalysts. *Teaching Children Mathematics* 12(6), 276-295.
- Jacobs, V. R., Franke, M. L., Carpenter, T.P., Levi, L., Battey, D. (2007) Professional Development Focused on Children's Algebraic Reasoning in Elementary School. *Journal for Research in Mathematics Education, May 2007*
- Jacobs, V. R., & Kusiak, J. (2006). Got tools? Exploring children's use of mathematics tools during problem solving. *Teaching Children Mathematics*, *12*, 470–477.
- Jacobs, V. R., Lamb, L. L. C., & Philipp, R. A. (2010). Professional noticing of children's mathematical thinking. *Journal for Research in Mathematics Education*, 41(2), 169–202.
- Jacobs, V. R., Lamb, L. L. C., Philipp, R. A., & Schappelle, B. P. (in press). Deciding how to respond on the basis of children's understandings. In M. G. Sherin, V. R., Jacobs, & R. A. Philipp (Eds.), *Mathematics teacher noticing: Seeing through teachers' eyes*. New York: Routledge.
- Jacobs, V. R., & Philipp, R. A. (2010). Supporting children's problem solving. *Teaching Children Mathematics*, 17(2), 98–105.
- Jacobs, V. R., and Philipp, R. A., (2004). Mathematical Thinking: Helping Prospective and Practicing Teachers Focus. *Teaching Children Mathematics*, 11(4), 194-201.
- Jaslow, L. & Jacobs, V. (2009, Spring). Helping kindergartners make sense of numbers to 100. *The Journal of Mathematics and Science: Collaborative Explorations*, 11, 195–213.

- Kazemi, E. (2003). Classroom practices that support children's mathematical ideas. In C. Howes (Ed.) *Teaching 4- to 8-year olds: Literacy, math, multiculturalism, and classroom community* (pp. 113-134). Baltimore, MD: Brookes.
- Kazemi, E. (2002). Exploring test performance in mathematics: The questions children's answers raise. *Journal of Mathematical Behavior*, *21*, 203-224.
- Kazemi, E., and Franke, M. L. (2004). Teacher Learning in Mathematics: Using Student Work to Promote Collective Inquiry. *Journal of Mathematics Teachers Education*, 7 (3), 203-235.
- Lamb, L. C., Philipp, R. A., Jacobs, V. R., & Schappelle, B. P. (2009). Developing teachers' stances of inquiry: Studying teachers' evolving perspectives. In D. Slavit, T. Holmlund Nelson, & A. Kennedy (Eds.), *Perspectives on supported collaborative teacher inquiry*, (pp. 16–45). New York: Taylor & Francis.
- Lampert, M., Beasley, H., Ghousseini, H., Kazemi, E., Franke, M. (2010) *Using designed instructional activities to enable novices to manage ambitious mathematics teaching* (pp. 129-141). In M.K. Stein & L. Kucan (Eds.) Instructional explanations in the discipline. New York: Springer.
- Levi, L. (2004). Are students in a reform mathematics class ill-equipped for traditional mathematics instruction? *Texas Mathematics Teacher*, *Spring 2004*, 24 27.
- Levi, L. (2000) Gender Equity in Mathematics Education. *Teaching Children Mathematics*, October 2000.
- Lubinski, C. A. (1994). The influence of teachers' beliefs and knowledge on learning environments. *Arithmetic Teacher*, 41(8), 476-479.
- Lubinski, C. A., Mariani, A. N. (1999). Affecting K-9 teachers' beliefs to improve instruction in mathematics. *The Mathematics Educator*, 4(1), 1-14.
- Lubinski, C. A. & Jaberg, P. A. (1997). Teacher change and mathematics K-4: Developing a theoretical perspective. In E. Fennema and B. Scott Nelson (Eds.), *Mathematics Teachers in Transition* (pp. 223-254).
- Lubinski, C. A., & Otto, A. D. (2004). Preparing K–8 preservice teachers in a content course for standards-based mathematics pedagogy. *School Science and Mathematics*, 104(7), 336-350.
- Lubinski, C. A., & Otto, A. D. (2004). How learning to make sense of mathematics in a content course can affect the beliefs of preservice teachers. In Krauthausen, Günter & Scherer, Petra (Eds.), *Mit Kindern auf dem Weg zur Mathematik: Ein Arbeitsbuch sur Lehrerbildung* (pp. 92-100). Donauwörth: Auer. (Invited chapter)

- Maldonado, L., Turner, E. E., Dominguez, H. & Empson, S. B. (2009) English Language Learners *Learning from* and *Contributing to* Discussions. *Mathematics for All: Instructional Strategies for Diverse Classrooms*. National Council of Teachers of Mathematics.
- Molina, M. and Ambrose, R. (2007) Fostering Relational Thinking While Negotiating the Meaning of the Equal Sign. *Teaching Children Mathematics, September 2006*, p. 111 118.
- Moscardini, L. (2010). 'I like it instead of maths': how pupils with moderate learning difficulties in Scottish primary special schools intuitively solved mathematical word problems. *British Journal of Special Education, Vol 37* Number 3.
- Moscardini, L. (2009). Tools or crutches? Apparatus as a sense-making aid in mathematics teaching with children with moderate learning difficulties. British Journal of Support for Learning, 24,(1), 35-41.
- Pateman, N., & Lubinski, C. A. (2004). Meeting the challenge of new mathematics standards in the United States: Two perspectives. In Krauthausen, Günter & Scherer, Petra (Eds.), *Mit Kindern auf dem Weg zur Mathematik: Ein Arbeitsbuch sur Lehrerbildung* (pp. 101-109). Donauwörth: Auer. (Invited chapter)
- Philipp, R. A. (2008). Motivating prospective elementary school teachers to learn mathematics by focusing upon children's mathematical thinking. *Issues in Teacher Education*, 17(2) 7-26.
- Philipp, R. A. (2007). Mathematics teachers' beliefs and affect. In F. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 257-315). Reston, VA: National Council of Teachers of Mathematics.
- Philipp. R. A., Ambrose, R. Lamb, L. L. C., Sowder, J., T., Schappelle, B. P., Sowder, L., Thanheiser, E., and Chauvot, J. (2007). Effects of early field experiences on the mathematical content knowledge of prospective elementary school teachers: An experimental study. *Journal for Research in Mathematics Education*. (28) 5, 438 476.
- Philipp, R. A., & Thanheiser, E. (2010). Showing your students you care: Seeing the individual trees in the classroom forest. *New England Mathematics Journal*, 42 (May, 2010), 8-17.
- Pierson, J, Lamb, L, Philipp, R., Schappelle, B., & Whitacre, I. (in press). Children's Reasoning about "Numbers *Under Zero.*" *Teaching Children Mathematics*.
- Pierson, J., Lamb, L., Philipp, R., Schappelle, B., & Whitacre, I. (2010). A Developing Framework for Children's Reasoning About Integers. In P. Brosnan, D. Erchick, & L. Flevares (Eds) *Proceedings of the 32nd Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 695-702). Columbus, OH: The Ohio State University. Downloaded from

http://pmena.org/2010/

- Schwerdtferger, Julie K., Chan, A. (2007). Counting Collections. *Teaching Children Mathematics, March* 2007, p. 356 361.
- Steinberg, R. M., Empson, S. B., Carpenter, T. P. (2004). Inquiry into Children's Mathematical Thinking as a Means to Teacher Change. *Journal of Mathematics Teacher Education*, 7(3), 237-267.
- Turner, E., Celedon-Pattichis, S., Marshall, M. & Tennison, A. (2009). "Fíjense amorcitos, les voy a contar una historia": The Power of *Story* to Support Solving and Discussing Mathematical Problems among Latino/a Kindergarten Students (pp. 23-43). In D. White & J. Spitzer (Eds). *Mathematics for Every Student: Responding to Diversity, Grades PreK-5 (pp. 19-42)*. Reston, VA: NCTM.
- Turner, E., Celedon-Pattichis, S., & Marshall, M. A. (2008). *Opportunities to Learn* Problem Solving and Mathematics Discourse among Latino/a Kindergarten Students. In R. Kitchen & E. Silver (Eds.), *Promoting high participation and success in mathematics by Hispanic students: Examining opportunities and probing promising practices* [A Research Monograph of TODOS: Mathematics for ALL] Washington, D. C.: National Education Association Press.
- Turner, E. & Celedon-Pattichis, S. (in press, April 2011) Problem Solving and Mathematical Discourse among Latino/a Kindergarten Students: An Analysis of Opportunities to Learn. *Journal of Latinos in Education*.
- Turner, E. E., Junk, D., & Empson, S. B. (2007). The power of paper-folding tasks: Supporting multiplicative thinking and rich mathematical discussion. *Teaching Children Mathematics*, *13*(6), 322-329.
- Warfield, J., & Yttri, M. J. (1999). Cognitively Guided Instruction in one kindergarten classroom. In J. V. Copley (Ed.). *Mathematics in the early years*. Reston, VA: NCTM.
- Warfield, J. (2001). Where mathematics content knowledge matters: Learning about and building on children's mathematical thinking (pp. 135-155). In T. Wood, B. S. Nelson, & J. Warfield (Eds.), *Beyond classical pedagogy: Teaching elementary school mathematics*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Webb, N., Franke, M., De, T, Chan A., Freund, D., Shein, P., Melkonian, D. (2009). "Explain to your Partner": Teachers' instructional practices and students' dialogue in small groups. *Cambridge Journal of Education*.
- Webb, N. M., Franke, M. L., Ing, M., Chan, A., De, T., Freund, D., & Battey, D. (2008). The Role of teacher instructional practices in student collaboration. *Contemporary Educational Psychology*, 33(3), 360-381.

Blogs run by members of the CGI team:

Empson, Susan B. *Learning Math, Teaching Math* by at http://www.edb.utexas.edu/empson/Levi, Linda L. *Understanding Children's Mathematic* at http://www.lindalevi@blogspot.com

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