Every Day Counts Calendar Math

Every Day Counts Calendar Math has been our supplemental math program to accompany the Louisiana Comprehensive Curriculum. Below are my findings regarding the validity of this program.

Publisher: Houghton Mifflin Harcourt

Target Grade Levels: K-6

Program Goals

The goal of this program is to provide ways to for students to gain the prerequisite skills they need to enroll in the higher-level math courses they will need to be successful in school and in life. It's components include daily whole class discussion and dialogic discourse, the usage of real life data and visual models, continuous exposure to critical mathematical concepts, making connections across mathematical strands, offering students multiple points of entry, cooperative learning, developing number sense and computational fluency, the usage of informal learning and games, differentiating instruction, and ongoing assessment.

Purpose of Research

Great Source Education Group contracted with RMC Research Corporation to conduct an independent study at the in the New Haven Public School District in New Haven, Connecticut. This research was pursued in order to determine whether this program produce significant differences in math achievement of low-performing students in fifth grade classrooms and what factors in implementation are associated with improved achievement in math?

Research Results

The data from this study was gathered from the results of a standardized measure of student achievement which measured math gains. The assessment was modeled after the Connecticut Mastery Test (CMT) for math with thirty five multiple choice questions and five open ended questions chosen from grade five math CMT released items. In addition to this data, the researchers collected data in the form of teacher logs and observations as well as a focus group survey. The results from the control group and the Every Day Counts Teaching group differ only by 5 tenths of a point. The main treatment effect for the total score (multiple choice and short answer scores combined) was not statistically significant, however. The adjusted posttest mean for students in the EDC group was 24.53 compared to 23.63 for the control group. The significant main effects indicate that after controlling for pretest

differences, students in the *Every Day Counts* condition significantly outperformed students in the control condition on the two subtests at the end of the school year.

Teacher logs and observations were combined to yield two types of variables: intensity and scope. (Intensity is a measure of how often a teacher/observer reported using specific strategies or techniques in the classroom. Scope, the second variable, is a measure of how many strategies or techniques were reported at least once by a teacher/observer). Students of teachers who were rated higher by the observers did significantly better on the multiple-choice questions. There was a significant interaction effect between hands-on activities intensity and treatment. It seems that students of control teachers who used hands-on activities more frequently tended to score higher on multiple-choice questions. Another interesting finding is that in both *Every Day Counts* and control conditions, students seem to do worse when their teachers used games more often, and they used more variety of manipulatives.

When the teachers that were a part of the focus group met, they determined that students became more comfortable with math concepts through multiple exposures. Students were able to use math vocabulary through repetition during the morning meeting. The multiple skills came together for the students as the year progressed. Bilingual students particularly could "talk math." The teachers commented that the student participation format allowed for students to become responsible for their own learning. The program helped students "write" math and explain their answers.

In addition to this study, there were 6 case studies conducted in various states (including 2 in Texas and 1 in Louisiana).

Pros	Cons
• Provides scripted assistance for teachers for each month • Fosters improvement of Math Vocabulary and understanding through discussion • Study conducted on students with various socioeconomic backgrounds • Delivers content incrementally to promote continuous learning and understanding • Vivid visuals • Research shows that this program promotes better test scores on Critical Thinking questions • Presents connections across several math strands and concepts	• Time consuming if teachers don't update boards correctly. • Easy for students to fall through the cracks (if teacher does not develop a system for monitoring) • Research is outdated (Recent research should be done to test program validity) • Difficult for teachers to implement without proper training • Assessments don't mirror state assessments (cannot rely on this program alone to prepare)

My Recommendation

I believe this is a great supplemental program for teachers to assist in creating a classroom climate that fosters rich mathematical discussions. We know that our students learn best through interaction and meaningful discussions with their peers. This program enlists tools to promote this mathematical dialogue. The problem is that teachers must have the proper training to implement this program, because a teacher's familiarity with the components of this program plays a large role on its effectiveness. How can the teacher facilitate and guide the necessary discussions if they are unaware of the various elements they should be including? The Counting tape and depositor are monumental

elements when it comes to the development of number sense especially since this is an area of weakness for lower performing students. Understanding number sense is also a prerequisite or gateway for all other standards. Along with our Comprehensive Curriculum, Every Day Counts Calendar Math will be a great tool in preparing our students to comprehend and problem solve. My main issue with this program, however, is that there should be more recent research done to substantiate continued use of this program. There were several case studies done shortly after the initial research was conducted, but there is no data from after the year 2002 documented.

Research Cited

Andrews, A. G. (1997, January). Doing what comes naturally: Talking about mathematics. *Teaching Children Mathematics,* 236–239.

Atanda, R. (1999, February). Do gatekeeper courses expand education options? Retrieved February 1, 2006, from http://nces.ed.gov/pubs99/1999303.pdf

Baratta-Lorton, M. (1994). *Mathematics their way.* Upper Saddle River, NJ: Pearson Learning.

Baroody, A. J., & Wilkins, J. L. M. (1999). The development of informal counting, number, and arithmetic skills and concepts. In J. V. Copley (Ed.), *Mathematics in the early years* (pp. 48–65). Reston, VA: National Council of Teachers of Mathematics.

Bartlett, F. C. (1932). *Remembering.* Cambridge: Cambridge University Press.

Bransford, J.D., Brown, A., & Cocking, R. (Eds.) (2000). *How people learn: Brain, mind, experience, and school.* Washington, DC: National Academy Press.

Bowman, B.T., Donovan, M.S., & Burns, M.S. (Eds.) (2001) *Eager to learn: Educating our preschoolers.* Washington, D.C.: National Academy Press.

Carpenter, K. & Bottoms, G. (2003, Spring). Preparing Middle-Grade Students for Algebra. *Middle Matters.* Retrieved February 1, 2006 from, http://www.naesp.org/ContentLoad.do?contentId=550

Clements, D. H. (1999). Geometric and spatial thinking in young children. In J. V.Copley (Ed.), *Mathematics in the early years* (pp. 66–79). Reston, VA: National Council of Teachers of Mathematics.

Cobb, P., Boufi, A., McClain, K., & Whitenack, J. (1997). Reflective discourse and collective reflection. *Journal of Research in Mathematics Education,* 28(3) 258–277.

Copley, J. V. (2000). *The young child and mathematics.* Reston: VA. National Association for the Education of Young Children and National Council of Teachers of Mathematics.

Curcio, F. R. & Schwartz, S. L. (1997, February). What does algebraic thinking look like and sound like with preprimary children? *Teaching Children Mathematics,* 296–300.

Economopoulos, K. (1998, December). What comes next? The pattern of mathematics in kindergarten. *Teaching Children Mathematics,* 230–233.

Fuson, K., Grandau, L., & Sugiyama, P. A. (2001, May). Achievable numerical understandings for all young children. *Teaching Children Mathematics,* 522–526.

Greenes, C. (1999). Ready to learn: Developing young children's mathematical powers. In J. V. Copley (Ed.), *Mathematics in the early years,* (pp. 39–47). Reston, VA: National Council of Teachers of Mathematics.

Greeno, J. G. (1988). The situated activities of learning and knowing mathematics. In M. J. Behr, C. G. Lacampagne, & M. M.Wheeler (Eds.) *Proceedings of the tenth annual meeting of the PME-NA,* (pp. 481–521). DeKalb, IL: Northern Illinois University.

Griffin, S. (2003, February). Laying the foundation for computational fluency in early childhood. *Teaching children mathematics,* 306–309.

Hermer, L. (1994, March). Increasing flexibility for spatial reorientation in humans linked to emerging language abilities. Poster presentation. Cognitive Neuroscience Society. San Francisco, CA.

Hiebert, J. & Carpenter, T. P. (1992). Learning and teaching with understanding. In D. A. Grouws (Ed.), *Handbook of Research on Mathematics Teaching and Learning.* New York: Macmillan Publishing Company.

Johnson, J. (2000, March). *Teaching and learning mathematics.* Retrieved August 20, 2003, from www.k12.wa.us/publications/docs/MathBook.pdf

Johnson, D., Johnson, R., Holube, E., & Roy, P. (1984). *Circles of learning: Cooperation in the classroom.* Alexandria, VA: Association for Supervision and Curriculum Development.

Kamii, C., Lewis, B. A., & Livingston, S. J. (1993). Primary Arithmetic: Children inventing their own procedures. *Arithmetic Teacher,* 41(4), 200–203.

Knapp, M. S. & Shields, P. M. (2004) *Reconceiving academic instruction for the children of poverty.* Retrieved February 19, 2004, from www.enc.org/topics/equity/articles/document.shtm?input=ACQ-111499-1499,00.shtm

Maturana, H., & Varela, F. (1980). *Boston University Philosophy of Science Series:* Vol.42. Autopoieis and cognition. Dordrecht: D. Riedel.

McClain, K. and Cobb, P. (1999). Supporting students' ways of reasoning about patterns and partitions. In J.V. Copley (Ed.), *Mathematics in the early years,* (pp. 112–118). Reston, VA: National Council of Teachers of Mathematics.

McLeod, B. (2004). *Educating students from diverse linguistic and cultural backgrounds: Language development.* Retrieved February 19, 2004, from www.ncela.gwu.edu/miscpubs/ncrcdsll/srsd/language.htm#Schools

Mueller, A., & Fleming, T. (2001, May/June). Cooperative learning: Listening to how children work at school. *The Journal of Educational Research,* 94(5), 259–265.

National Association for the Education of Young Children & National Council of Teachers of Mathematics. (2002, April). *Early childhood mathematics: Promoting good beginnings.* Joint position statement.

National Council of Teachers of Mathematics (1989). *Curriculum and evaluation standards for school mathematics,* Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics (1995). *Assessment standards for school mathematics,* Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics.* Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics. (2000). *Professional standards for school mathematics.* Reston, VA: National Council of Teachers of Mathematics.

National Research Council. (2001). *Adding it up: Helping children learn mathematics.* Washington, DC: National Academy Press.

O'Conner, S. & McGuire, K. (1998). *Homework assistance and out-of-school time: Filling the need, finding the balance.* Wellesley, MA: National Institute on Out-of-School Time.

Resnick, L. B., & Omanson, S.F. (1987). Learning to understand arithmetic. In R. Glaser (Ed.), *Advances in Instructional Psychology,* vol. 3, (pp. 41–95). Hillsdale, NJ: Lawrence Erlbaum.

Rumelhart, D.E. (1975). Notes on a schema for stories. In D.G. Bobrow & A.M. Collins (Eds.), *Representation and Understanding,* (pp. 211–236). New York: Academic Press.

Schifter, D. (1997, March). Developing operation sense as a foundation for algebra. Retrieved February 1, 2006, from ERIC database http://eric.ed.gov/ERICDocs/data/ericdocs2/content_storage_01/0000000b/80/26/86/7b.pdf

Schoenfeld, A. (1992). Learning to think mathematically: Problem solving, metacognition, and sense making in mathematics. In *The Handbook for Research on Mathematics, Teaching, & Learning.* New York: MacMillan.

Shane, R. (1999). Making connections: A 'number curriculum' for preschoolers. In J.V. Copley (Ed.), *Mathematics in the Early Years,* (pp. 129–134). Reston, VA: National Council of Teachers of Mathematics.

Sisul, J. S. (2002, December). Fostering flexibility with number in the primary grades. *Teaching Children Mathematics,* 202–204.

Sophian, C. (1999). Children's ways of knowing: Lessons from cognitive development research. In J. V. Copley (Ed.), *Mathematics in the early years,* (pp. 11–20). Reston, VA: National Council of

Teachers of Mathematics.

Steele, D. F. (1998, January). Look who's talking: Discourse in a fourth-grade class. *Teaching Children Mathematics,* 286–292.

Thorndike, E. L. (1914). *The Psychology of Learning.* New York: Teachers College.

Von Glasenfeld. (1995). *Radical Constructivism: A way of knowing and learning.* London: Falner.

Whitin, P. & Whitin, D. J. (2002, December). Promoting communications in the mathematics classroom. *Teaching Children Mathematics,* 205–211.

Wu, H. (2001, Summer). How to prepare students for algebra. Retrieved February 1, 2006, from http://www.aft.org/pubs-reports/american_educator/summer2001/algebra.pdf


Grade 5
October
Daily Decimal
Today we have
EVERY DAY
COUNTS
CALENDAR MATH