

Every Day Counts[®]

Grades K–6

Research Base and Program Effectiveness

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EVERY DAY COUNTS® PROGRAM OVERVIEW

Every Day Counts is an interactive K–6 bulletin board program (*Calendar Math* for grades K–5 and *Algebra Readiness* for grades 6 and above) that helps students build key math concepts a little at a time, every day. Working with a calendar, counting tape, clocks, coin counters, graphs, and other elements that change throughout the school year, students analyze data, see patterns, explore math relationships, prepare for algebra, and communicate their thinking to the teacher and each other. The continuous learning experience offered by *Every Day Counts* has been instrumental in increasing student math proficiency and test scores at many schools throughout the country.

Reports from school districts who have used *Every Day Counts* for one or more years have shown the following:

- Math scores on standardized tests have increased—in many cases dramatically.
- Students entering subsequent grades are more knowledgeable if they have used *Every Day Counts* in the previous grade.
- Students become more articulate and confident about their understanding of mathematics.

The constant communication inherent in *Every Day Counts* has allowed teachers to ask rich, open-ended questions, accept multiple strategies for solving math problems, and gain insight into how their students think and approach problems—important steps to helping students become better learners.



Introduction

Education in the United States is receiving renewed focus from current and emerging federal policies. Under the No Child Left Behind legislation, all students in grades 3–8 must be tested yearly in mathematics to ensure that every child achieves in math. Additionally, as more school districts implement the recommendation of the National Council of Teachers of Mathematics that all students enroll in algebra by grade 8 (NCTMb, 2000), they must find ways to make sure that students 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.

Every Day Counts is based on best classroom practices for teaching mathematics that have been validated by scientific research. These practices 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.

What Research Says

The five mathematical process standards—communication, reasoning and proof, connections, problem solving, and representation—are ways in which children can acquire and use content knowledge (NCTMa, 2000). “Cobb, Yackel, and Wood (1991) say that when children are given opportunities to talk about their mathematical understanding, occasions for learning mathematics are natural” (Steele, 1998).

Instruction through discourse and collective reflection helps children achieve mathematical understanding. Whitin and Whitin discovered “[T]alking was an effective way for children to clarify their thinking, discuss new possibilities, [and] extend the thinking of others” (Whitin & Whitin, 2002; NCTMa, 2000). Cobb states in his observations of first-grade students, “the children did not happen to spontaneously reflect on a prior activity at the same moment. Instead, reflection was supported and enabled by participation in discourse” (Cobb, Boufi, McClain, & Whitenack, 1997). “Language has a distinctive orienting function (Maturana & Varela, 1980), and classroom discourse can exploit this function to orient students’ attention to mathematical relationships of interest.... Communication among the students and teachers is enhanced because all participants can focus their attention on the same entities and relationships between entities.... In fact, the language used to talk with others about materials may be crucial for students in constructing relationships (Greeno, 1988b; Resnick & Omanson, 1987)” (Heibert & Carpenter, 1992). “The establishment of a classroom participation structure that provides students with opportunities to explain and justify different solutions allows teachers to build on students’ contributions as they move toward desired pedagogical goals. This discourse is central to reform and makes possible students’ development of mathematical beliefs and values that contribute to the development of their intellectual autonomy” (McClain & Cobb, 1999).

How *Every Day Counts* Puts Research into Practice

By making communication the centerpiece of *Every Day Counts*, children can listen to their peers to learn and solidify their understanding through explanation and discussion, and teachers can listen and observe to assess learning (Copley, 2000). The activities in *Every Day Counts* are based on whole-class discussions. These daily discussions work to foster interaction among all the students and promote dialogue about mathematics. During these discussions students exchange ideas and approaches to mathematical topics that help them develop a deeper understanding of various mathematics concepts as they compare and contrast different ways to view and solve problems (Schoenfeld, 1992). Furthermore, daily discussion benefits students by providing them opportunities to express their thinking before a group in a non-threatening, secure setting. “Children learn from one another as they communicate” (NCTM, 1989).

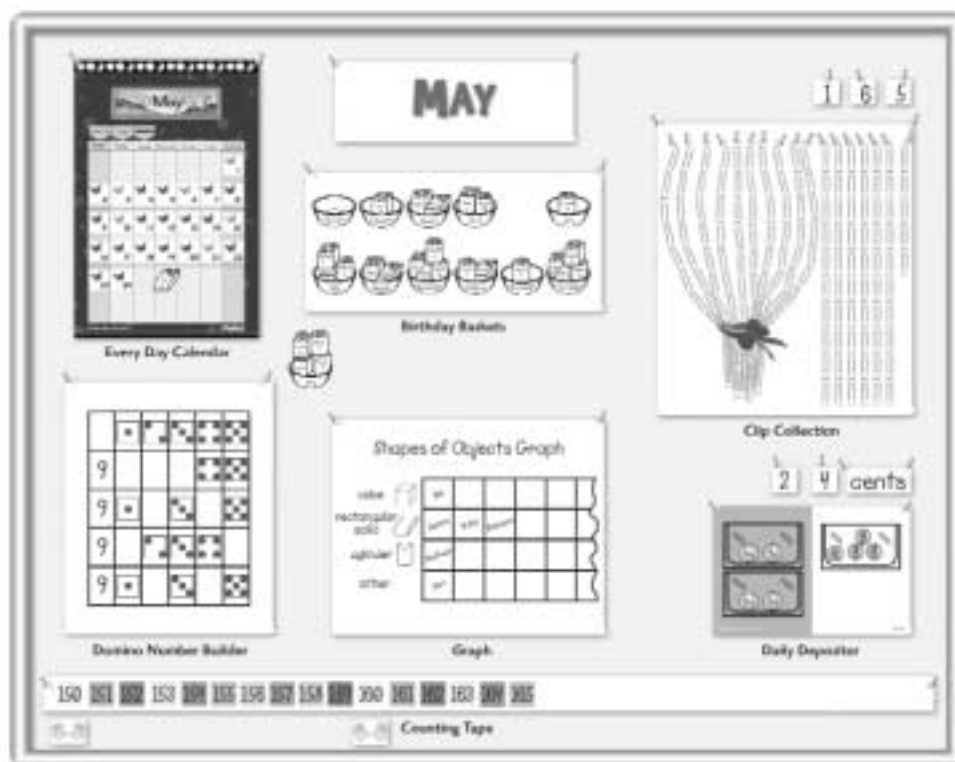
One result of this exchange of ideas and strategies is that students build their own understandings of mathematics concepts based on their discussions. Their understanding is deeper than that gained by memorizing a teacher’s examples. “Children who have the opportunity to consistently construct their personal understandings of mathematics concepts are more mathematically powerful than those who do not” (Kamii, 1993). Research clearly supports the superior depth and stability of the mathematical concepts that children

DAILY, WHOLE-CLASS DISCUSSION (continued)

construct for themselves based on effective experiences provided by the *Every Day Counts* (von Glasenfeld, 1995; Kamii, 1993). When children have built their own personal understandings, they have a more solid grasp of the concept and a stronger base on which to build future concepts.

While mathematical vocabulary can be difficult for young children to acquire, the repeated conversations fostered by *Every Day Counts* help students learn and retain key mathematical terminology. “When children talk about mathematical concepts, they are actually increasing their understanding of that concept. Language allows them to reflect on and revise their thoughts” (Andrews, 1997).

The teacher’s role in initiating and shifting the discourse is critical. Open-ended questions are provided in the Teacher’s Guide to promote thinking and reasoning, reflecting and understanding. Sample questions and discussions in the Teacher’s Guide are provided to give the teachers guidance. “The teacher plays a proactive role in guiding the development of reflective discourse while simultaneously stressing that both such discourse is an interactional accomplishment and that students necessarily have to make an active contribution to its development. The teacher also needs to record the children’s contributions” (Cobb et al., 1997; Shane, 1999). For example, records may include graphs, data, or estimates. Getting children to talk about what they see and do helps to make their knowledge more explicit (Sophian, 1999).



What Research Says

According to Economopoulos, being able to generalize about a pattern and use known information to predict unknown information is a powerful aspect of patterns. “Because our number system is built on a system of patterns and predictability, students must be able not only to identify the patterns that they see but also to give reasons and evidence for why the patterns exist” (Economopoulos, 1998).

How *Every Day Counts* Puts Research into Practice

Patterns pervade *Every Day Counts*. A variety of patterns, linear and non-linear, number patterns (counting), geometric patterns, and patterns involving measurement terms are used in activities throughout the year. The calendar presents a unique pattern each month to help children develop skills in the area of patterning, logic, and reasoning. The patterns begin simply in the primary grades, but by grade 3 the program includes overlapping patterns, patterns that include geometric shapes and fractions, and by grade 6 the recognition of prime and composite numbers.



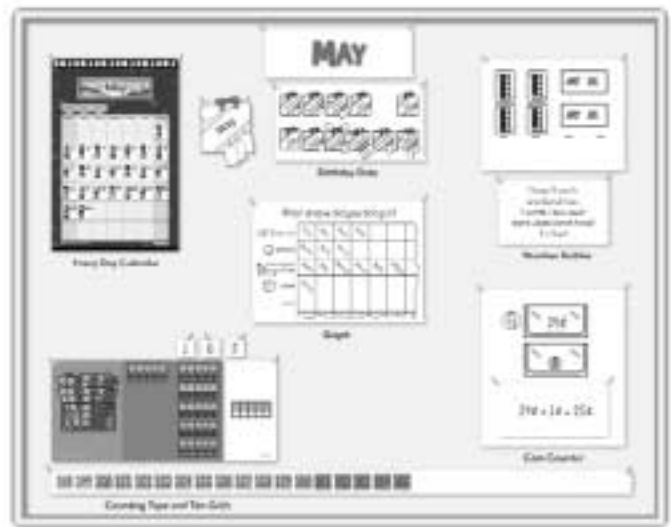
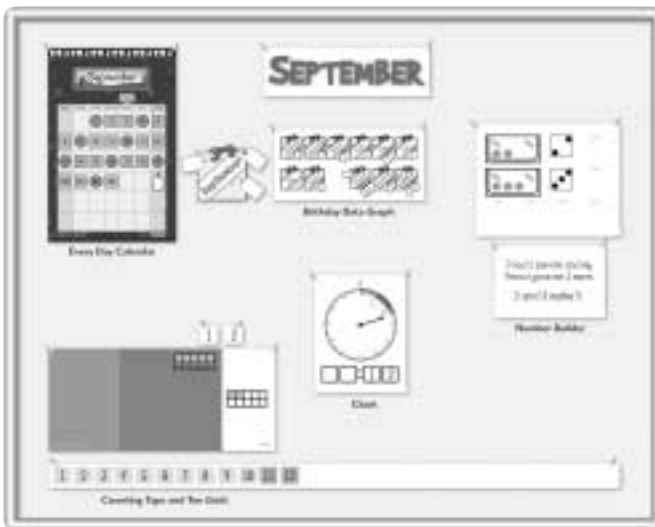
What Research Says

Not every child acquires mathematical understanding at the same time, the same pace, or through the same modality (Bowman, Donovan, & Burns, 2001). Using Heibert and Carpenter’s definition of understanding, “the structuring process that produces understanding is built on networks of mental representations that are built gradually as new information is connected to existing networks, or as new relationships are constructed between previously disconnected information” (Heibert & Carpenter, 1992).

This understanding thus promotes remembering. “Evidence from verbal learning and comprehension suggests that these modifications are made to bring the information in line with the person’s current knowledge” (Rumelhart, 1975). That way, the information is represented by students in a way that fits with their existing network of knowledge. Making connections between new information and existing knowledge already represented in networks is one way of characterizing Bartlett’s (1932) observation of a natural “effort after meaning.” Memory, if viewed as a reconstructive process, involves the same cognitive activity as understanding: constructing connections between representations of new knowledge and existing knowledge” (Heibert & Carpenter, 1992).

How *Every Day Counts* Puts Research into Practice

Every Day Counts is designed to deliver content incrementally to promote continuous learning and understanding. Students confront a specific skill, (i.e. working with money) in different settings and in different question formats during the program. They may make change, represent a specific amount in different ways, or select the coins needed to purchase a particular item. *Every Day Counts* allows students to develop understanding of important mathematical concepts over time and learn at an individual pace. Allowing students to build understanding over time with continuous review has proven to be an effective way to maintain skills and an understanding of critical mathematical concepts (Baratta-Lorton, 1994).



MAKING CONNECTIONS ACROSS MATHEMATICAL STRANDS

What Research Says

According to Thorndike (1914), the degree of positive transfer from one task to another is a function of the number of elements that the tasks share. If many of the elements or components that make up the tasks are alike, then the transfer from one task to another is high” (Heibert & Carpenter, 1992). Instructional approaches that use multiple representations help children to understand mathematics as an integrated system, allowing children to more easily access information when they need it (Sophian, 1999).

How *Every Day Counts* Puts Research into Practice

Every Day Counts presents connections across several math strands and concepts daily including place value, time, money, patterns and functions, algebra, graphing, statistics and probability, mental math, estimation, measurement, geometry, number, operations, data, and problem solving, which enhances transfer of learning. (Note: Topics vary by grade level.)

OFFERING STUDENTS MULTIPLE POINTS OF ENTRY

What Research Says

By presenting appropriate mathematical concepts orally, visually, and kinesthetically, each child can move the information into long-term memory in a manner that works best for him or her. It is these deep and sustained interactions with key mathematical ideas that enable children to acquire mathematical understanding (NAEYC/NCTM, 2002). “Classroom lessons involving manipulatives have a higher probability of producing greater mathematics achievement than do lessons not using manipulatives” (Johnson, 2000).

How *Every Day Counts* Puts Research into Practice

Every Day Counts is based on the information gleaned from brain research and the understanding that young children must actively construct mathematical knowledge. The program organization allows children continuous points of entry through a variety of modalities. From the beginning of *Every Day Counts* to the end, children have the opportunity to preview and review math concepts. One example involves the patterns on the calendar that invite children to see relationships and make predictions throughout the school year at every grade. A child who does not fully understand the pattern in September has an opportunity each month throughout the year to grasp this and other concepts. Most of the elements in *Every Day Counts* offer this continuous entry to provide deep understanding of concepts not achievable in a single chapter or unit. *Every Day Counts* also uses a variety of manipulatives (from the kit and the classroom) to help students to better visualize and understand the mathematical concepts.

COOPERATIVE LEARNING

What Research Says

“Cooperative learning promotes the use of effective reasoning strategies and greater critical thinking than do individual learning strategies.” (Johnson, Johnson, Holube, & Roy, 1984). Students learn to work with others in a collaborative effort and are encouraged to explain their thinking to the whole group. Cooperative settings promote a positive attitude towards mathematics, as well as continuing to motivate children (Johnson et al., 1984). Each child does his or her share of the explorations. Then, children share their thinking with others and benefit from hearing how others thought about and solved a particular problem (Mueller & Fleming, 2001).

How *Every Day Counts* Puts Research into Practice

An integral aspect of *Every Day Counts* is that children gather together around the calendar and work together to discuss what’s happening every day.

NUMBER SENSE AND COMPUTATIONAL FLUENCY

What Research Says

Proportional thinking can begin in pre-kindergarten. At each grade level, students keep track of the number of school days on the counting tape. In kindergarten, each number, from one to ten, is represented by a different color and this color pattern is repeated for each group of ten. Students can visually see that numbers that are the same color also end with the same digit. By first grade, students are counting the days of school in groups of ten. In the upper elementary grade levels, the counting tape is utilized to highlight multiples, fractions, and decimals. Without using abstract symbolic notation, children begin to see a proportional relationship (Curcio & Schwartz, 1997). The counting tape helps to strengthen students’ number sense. “[T]he number line gives a unified geometric representation of integers and rational numbers within the real number system, later to be encountered in geometry, algebra, and calculus” (National Research Council, 2001).

How *Every Day Counts* Puts Research into Practice

Every Day Counts allows students to acquire number sense by constructing understanding internally rather than the teacher telling the children what to do. Through a variety of structured daily activities, children develop number sense and computational fluency. Children use manipulatives to compose and decompose number; sort, count and group objects; combine and compare quantities. While doing these activities, children explain what they see and making predictions and generalizations based on what they understand. “Taking the time to listen to other strategies is important ... it is an opportunity for students who may not be as confident to hear a strategy that they can relate to, and also for students who consistently rely on one strategy to hear other strategies verbalized” (Sisul, 2002; Griffin, 2003).

Every Day Counts uses a variety of physical and visual models to show number. In pre-kindergarten, groups of five are represented by fingers colored in on a cutout of a hand and quantities to nine are represented by circles arranged in domino configurations and ten frame configurations.

Children are telling stories about quantities of classroom objects. They discuss the similarities and differences of the different representations for numbers. Teachers are guiding the children’s discussions and encouraging them to reflect on their discoveries. These activities build oral language skill and good listening and thinking skills. The verbal and visual supports promote understanding of oral number words and cardinal number (Fuson, Grandau, & Sugiyama, 2001). “Counting and counting knowledge in its various forms is an integral aspect of young children’s everyday life. Indeed, it could be argued that the construction of counting concepts and skills is the single most important element in young children’s mathematical development. Not only are counting competencies essential everyday ‘survival skills’ in their own right, they provide a basis for the development of number and arithmetic concepts and skills” (Baroody & Wilkins, 1999).

Spatial concepts and measurement concepts are also important skills for children. Geometric and measurement attributes connect to language development at this age. Children are defining objects in their environment based on size, shape, and position. “As can be seen, then, spatial concepts and language are intimately related. As language and concepts develop, performance on spatial tasks has been shown to improve” (Hermer, 1994). Thus, it is important that young children be given numerous opportunities to develop their spatial and language abilities in tandem” (Greenes, 1999). “Shape concepts begin forming in the preschool years and stabilize as early as age six. Children can and should discuss the parts and attributes of shapes. Activities that promote such reflection and discussion include building shapes from components. We should encourage children to describe why a figure belongs or does not belong to a shape category” (Clements, 1999).

ALGEBRA READINESS

What Research Says

Preparing all students to take algebra by the eighth grade is an important goal because algebra is one of the courses that puts students on track for college. Students who enroll in algebra by eighth grade are more likely to go on to college than students who do not (Atanda, 1999).

To prepare students for success in algebra they need well-developed number sense, computational fluency, and an understanding of patterns. They need exposure to both real-world problem solving and abstract mathematical reasoning. (NCTM, 2000; Wu, 2001; Carpenter & Bottoms, 2003; Schifter, 1997).

How *Every Day Counts* Puts Research into Practice

Every Day Counts prepares K–5 students to be successful in algebra with lessons that develop their mathematical thinking and communication skills and ensure that they have a solid foundation of computational, operational, and problem-solving skills to build on when they move into middle school mathematics.

**How *Every Day Counts*
Puts Research into Practice
(continued)**

The Every Day Counts Algebra Readiness kit for grades 6 and above develops critical algebra readiness concepts such as fractions, decimals, and percents; integers, number patterns; mental math and estimation; algebraic representation with variables, expressions, equations, and graphing; measurement; and geometry. The lessons in *Algebra Readiness* expand on the math foundation that students already have, fill in any gaps that would otherwise keep them from succeeding in an algebra course, and develop middle schoolers' math confidence so they feel that they have the tools they need to succeed.

HANDS-ON LEARNING AND MATH GAMES

What Research Says

Many younger children are interested in all school subjects, but their interest in mathematics wanes as they approach the upper elementary school grades. Students involved in supplemental mathematics programs are more likely to have a positive attitude towards mathematics (Bransford, Brown, & Cocking, 2000).

**How *Every Day Counts*
Puts Research into Practice**

The content of the mathematics in the *Every Day Counts* program is drawn from topics that are appropriate for each grade level, but is not simply a repetition of what students see in their math textbook. Students discuss thought-provoking patterns that are rich in mathematical content and application that will improve their mathematical abilities. Students continue to be interested in mathematics because the activities of *Every Day Counts* are not simply drill and practice. Students search for patterns, make and test engrossing conjectures, and discover interesting mathematics concepts. In addition to being engaged, these various tasks promote an interest in mathematics and a determination in children to learn more interesting aspects of mathematics. While doing so, students improve their skills and understanding of mathematics at their level (O'Conner & McGuire, 1998).

Every Day Counts has a positive effect on the general attitude students have about mathematics. Children in the *Every Day Counts* work with mathematics concepts in compelling problem contexts. The activities are designed to maintain student interest in mathematics by putting mathematics in engaging types of problems that focus on major concepts rather than rote drill and memorization. Students learn that mathematics can be appealing and fun.

ACCESSIBLE INSTRUCTIONAL MATERIALS

What Research Says

A study of limited English proficiency students funded by the Office of Educational Improvement found that children learn best when they are given a relevant context for their learning. For example, for students learning a new language, “[r]ather than participating in structured skill-and-drill practice selected and directed by the teacher, these students are practicing English by using it to communicate their own ideas to each other and to the teacher” (McLeod, 2004). In addition, children of poverty need greater opportunities to direct their own learning (Knapp & Shields, 2004).

ACCESSIBLE INSTRUCTIONAL MATERIALS (continued)

How *Every Day Counts* Puts Research into Practice

Every Day Counts appeals to students with many different learning styles and backgrounds including ELL students, children of poverty, and the learning disabled. The visual, verbal, kinesthetic, social, and interpersonal aspects of the program not only help make mathematics accessible to all students but also help students in their overall academic achievement. During the whole-class discussions, students are given numerous, tangible real-world contexts for their learning. As a result, students internalize important concepts quickly and are able to communicate their understanding to others and connect it to new topics. *Every Day Counts* encourages all students to be active participants in their learning by involving everyone in the whole-class discussions. Also, since the various elements of the program remain on the bulletin board throughout the school year, a struggling learner who may not have been able to recognize a pattern in September will still have the opportunity to see that pattern and may understand it in December.

MEANINGFUL, ONGOING ASSESSMENT

What Research Says

“Assessment should be more than merely a test at the end of instruction to see how students perform under special conditions; rather, it should be an integral part of instruction that informs and guides teachers as they make instructional decisions” (NCTMa, 2000). Building ongoing assessment into instruction and class discussion allows teachers to evaluate how students are learning and adjust instruction. When students talk about what they are learning the teacher gains insight into what students are thinking about a topic. “The teacher ‘becomes aware’ of the students’ thinking through their language” (Steele, 1998). Students reap the benefits of immediate assessment by correcting any flawed reasoning and applying this corrected thinking to subsequent problems.

How *Every Day Counts* Puts Research into Practice

The assessment in *Every Day Counts* includes ongoing assessment and copymaster tests that may be used to monitor student progress four times during the school year. The assessment is ongoing, and provides students the opportunity to demonstrate mastery at several opportunities in addition to daily checks of understanding. The student discourse that occurs as a result of *Every Day Counts* allows teachers to evaluate students’ understanding and comprehension.



CONCLUSION

The *Every Day Counts* program format is similar at every grade, ensuring continuity throughout the program from pre-kindergarten to grade 6. The topics and challenges at each grade are aligned with NCTM standards and build on what students learn in class with activities that engage students, allowing them to explore, make and test conjectures, and apply their mathematical understanding. The activities regularly include games and explorations that students find captivating. While involved in these activities, students are motivated and interested as they learn mathematics concepts and relationships. *Every Day Counts* promotes children's social skills as they actively participate in discussions about mathematics. They are part of activities and explorations that are age-appropriate and involve topics that are suitable for their respective grade levels, in a safe, secure environment.

EVERY DAY COUNTS® EFFECTIVENESS EVALUATION STUDY

New Haven, CT Public School District, New Haven, CT

Introduction

Great Source Education Group contracted with RMC Research Corporation to conduct an independent study to answer the following research questions:

- Does *Every Day Counts* produce significant differences in math achievement of low-performing students in fifth grade classrooms?
- Which factors in implementation are associated with improved achievement in math?
- The study was conducted with 587 students in New Haven, Connecticut during the 2004–2005 school year.

Research Design

Twelve schools in New Haven, CT were selected for the *Every Day Counts* effectiveness evaluation study. Schools were divided into three groups of four schools: low, middle, and higher, based on the Connecticut Mastery Test (CMT) for math 2002–2003 test scores.

School pairs were selected within each group based on demographic characteristics and randomly assigned to treatment or control condition, resulting in six schools in the treatment condition and six schools in the control condition. Random assignment was done at the school level, (not the teacher level) because the district requires that grade level teachers plan and use the same curriculum materials. In the summer of 2004, two teachers from an additional school piloted *Every Day Counts* in a grade five summer school session and were added to the *Every Day Counts* group in the study.

The study used a standardized measure of student achievement, observations, teacher logs, surveys, and a focus group to measure math gains and collect information about the use and effectiveness of *Every Day Counts*.

Teachers assigned to the *Every Day Counts* group were responsible for participating in up to three two-hour training sessions, implementing instructional materials according to training guidelines, and attending an end-of-study focus group.

Student Characteristics

Data was collected from 587 students from 28 classrooms in 13 schools. The *Every Day Counts* group contained 322 students (54.9%), and the control group contained 265 students (45.1%). Students were approximately equally divided by gender. Over half the students were African American. Most participated in a free/reduced price lunch program. The table below provides a detailed description of student characteristics for *Every Day Counts* and control students.

Student Characteristics*

Variables	Control Students	<i>Every Day Counts</i> Students
NUMBER	265	322
ELL	11.3%	6.2%
ETHNICITY		
African American	67.9%	49.1%
Hispanic	24.5%	30.7%
Caucasian	7.2%	18.0%
Other**	0.4%	2.2%
GENDER		
Female	53.2%	44.4%
Male	46.8%	55.6%
Special Education	7.2%	6.5%
Free/Reduced Lunch	92.5%	97.8%

*Includes students who had no pretest scores but were tested at posttesting.

**Includes Asian, and mixed.

Teacher Characteristics

Twenty-eight teachers in 13 schools participated in the study. Teachers had a wide range of teaching experience in both the *Every Day Counts* and control group. On average, *Every Day Counts* teachers had been teaching for slightly longer than control teachers.

Teacher Characteristics

Variables	Control Teachers	<i>Every Day Counts</i> Teachers
	MEAN	MEAN
NUMBER OF YEARS TEACHING	9.75	13.31
NUMBER OF YEARS TEACHING MATH	5.58	7.77
HIGHEST DEGREE		
BA/BS	21.4%	7.1%
MA/MS	64.3%	87.7%

Assessment

The study used a standardized measure of student achievement to measure 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. The maximum score for multiple choice is 35 and for short answer is 8. Students could have up to 70 minutes to complete the test. No calculators were allowed but rulers were needed for the open-ended questions. Differences in the pretest scores were controlled between treatment and control in the final data analysis. The pretest was given the week of November 22, 2004 and the posttest was given the week of May 23, 2005.

Data Analysis

Data analysis was conducted in three steps. The first step was descriptive analysis, which looked at student and teacher characteristics, findings from teacher logs and classroom observations. The second step used analysis of covariance (ANCOVA) on student level data, to examine whether there was any significant treatment effect on student posttest scores after controlling for pretest differences. The third step used a multi-level approach involving student level, teacher level, and school level variables.

Results
Classroom Logs and
Observations

Three categories of teaching strategies were reported in logs and observations: teaching techniques, grouping practices, and classroom activities. Intensity scores (a measure of how often a teacher/observer reported using specific strategies in the classroom) were calculated for every variable within the three categories. *Every Day Counts* and control teachers reported using similar strategies in their classroom. The top three strategies in each category are presented below.

Teaching Strategies

Strategy	Condition	Frequency	% of Teachers Who Used Strategy
TECHNIQUES			
Modeling	Both	80.24	100%
	<i>Every Day Counts</i>	81.18	100%
	Control	81.56	100%
Reviewing	Both	68.17	100%
	<i>Every Day Counts</i>	67.75	100%
	Control	70.02	100%
Monitoring	Both	67.03	96.43%
	<i>Every Day Counts</i>	64.47	100%
	Control	74.94	46.43%
GROUPING PRACTICES			
Whole Class	Both	87.60	100%
	<i>Every Day Counts</i>	84.58	100%
	Control	89.88	100%
Small Group	Both	34.57	89.28%
	<i>Every Day Counts</i>	30.12	46.43%
	Control	42.03	42.86%
Individual	Both	34.13	85.71%
	<i>Every Day Counts</i>	30.06	42.86%
	Control	41.15	42.86%
ACTIVITIES			
Question and Answer	Both	61.57	100%
	<i>Every Day Counts</i>	59.38	100%
	Control	64.83	100%
Hand On Activities	Both	49.77	96.43%
	<i>Every Day Counts</i>	58.53	100%
	Control	40.33	46.43%
Games	Both	10.49	67.86%
	<i>Every Day Counts</i>	8.07	32.14%
	Control	13.91	35.71%

Student Test Scores

Analysis of covariance (ANCOVA) on student level data to examine whether there was any significant treatment effect on student posttest score after controlling for pretest differences was used to compare the *Every Day Counts* group to the control group.

For the multiple-choice question scores, there was a significant treatment main effect ($F_{(1, 520)} = 5.12, p = .024$). The adjusted mean was 20.22 for *Every Day Counts* students and 19.28 for the control students.

New Haven, CT EDC vs. Control: Multiple Choice Math Scores*



*Adjusted for pretest differences.

There was also a significant treatment main effect on the short-answer question scores, ($F_{(1, 520)} = 9.86, p = .002$). The adjusted mean for *Every Day Counts* students was 4.55 compared with 4.05 for the control students.

New Haven, CT EDC vs. Control: Short Answer Math Scores*



*Adjusted for pretest differences.

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.

The main treatment effect for the total score (multiple choice and short-answer scores combined) was not statistically significant ($F_{(1, 520)} = 3.31, p = .069$), however. The adjusted posttest mean for students in the EDC group was 24.53 compared to 23.63 for the control group.

Multi-Level Analysis and Results

In addition to the ANCOVA data analysis, a multi-level approach involving student level, teacher level and school level variables was used (HLM analysis).

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.) In addition, observers rated teachers on 15 items (on a 1–5 scale) during their observations. From that scale a total mean score was calculated, rating how effective the teachers were in regards to their instruction, classroom management, and use of resources.

For multiple-choice questions, five variables were entered in the HLM analyses: Manipulatives scope, activities scope, hands-on activities intensity, games intensity, and observer rating total score. When both student and teacher level predictors were included, significant treatment effect and some interaction effects were found. There was a significant treatment effect on student posttest multiple-choice questions scores. In addition, 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 1) their teachers used games more often, and 2) they used more variety of manipulatives.

For short-answer questions, four variables were included: Manipulatives scope, grouping practices scope, hands-on activities intensity, and observer rating total score. There was a significant treatment effect, with students in *Every Day Counts* schools doing significantly better than the students in the control schools. In addition, teachers whose behavior, classroom climate and use of resources were rated more positively by the observers tended to have students who scored better on the short-answer questions posttest. In both conditions, girls seem to have done better on this test.

For the combined score of multiple-choice and short-answer questions, six predictors were entered in the HLM analyses: Manipulatives scope, activities scope, grouping practices scope, hands-on activities intensity, games intensity, and observer rating total score. For the total score, while there was no significant treatment effect, the results showed that teachers who used hands-on activities more frequently and who were rated more positively by observers had students who obtained higher total scores.

Teacher Focus Group Comments

Teachers from all the *Every Day Counts* schools attended a two hour focus group discussion. The overall purpose was to learn how the teachers used *Every Day Counts* and how they thought the program influenced student learning. The teachers made the following comments about the program:

- 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 teacher 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.

Every Day Counts teachers were asked to rate on a scale from 1 (not at all effective) to 5 (very effective) their impressions of the *Every Day Counts* materials and how useful they were in demonstrating math concepts. Overall, responses were positive. Means for specific materials and concepts are presented below.

Teachers’ Rating of Effectiveness

Item	Mean*
EFFECTIVENESS OF SPECIFIC EDC MATERIALS	
Teacher’s Guide	4.69
Calendar	4.77
Money/Daily Depositor	15.9
Counting Tape/Daily Decimal	4.46
Factor Figures	3.92
Arrays	4.08
Graphs	4.31
Clock	3.58
Fraction a Day	4.31
Coin Counter	3.46
EFFECTIVENESS OF EDC FOR SPECIFIC CONCEPTS	
Measurement	4.15
Patterns	4.69
Fractions	4.54
Computations	4.15
Decimals	4.50

*Scale of 1 (not at all effective) to 5 (very effective).

Conclusions

Significant treatment effect was found for multiple-choice and short-answer questions. Teachers who were rated more positively by the observers tended to have students who obtained better scores on all three outcomes (multiple choice, short answer, and total). Teacher ratings of *Every Day Counts* effectiveness tended to be high, especially for the teacher guide, calendar, and teaching patterns and fractions.

Norfolk City School District

Norfolk, VA

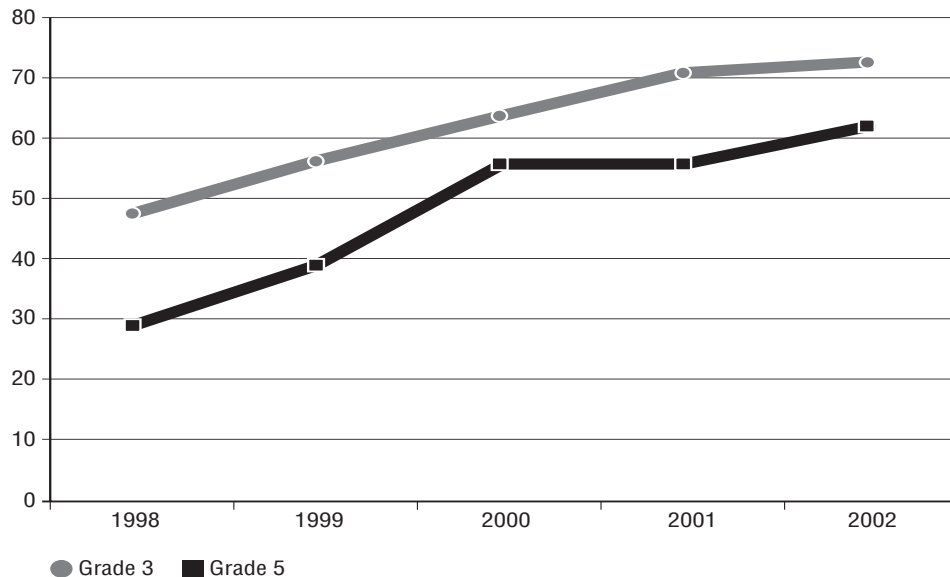
Scores in 1998 for grades 3 and 5 at the Norfolk City School District indicated that less than 50% of students in both grades were passing the Mathematics Standards of Learning Test. The district began using *Every Day Counts* in 1999 and saw a steady increase in test scores for both grades every year since the implementation of the program.

Denise Walton, Senior Coordinator, Mathematics attributes the consistent rise in test scores to *Every Day Counts* commenting, “We credit the connections that *Every Day Counts* makes with multiple objectives for helping us to achieve consistently positive results.”

Norfolk City School Test Scores

	1998	1999	2000	2001	2002
GRADE 3	47.1	56.3	63.5	70.3	72.8
GRADE 5	29.8	39.8	56.5	56.5	61.9

Percentage of Students Passing



EVERY DAY COUNTS® CASE STUDIES

Outley Elementary School

Alief, TX

Outley Elementary School is a Title 1 School within the Alief School District with a diverse student population that has achieved striking results with *Every Day Counts*. Students' TAAS scores rose dramatically during the first year of use (1996–97) and rose continually year after year as *Every Day Counts* gradually became implemented across all grade levels.

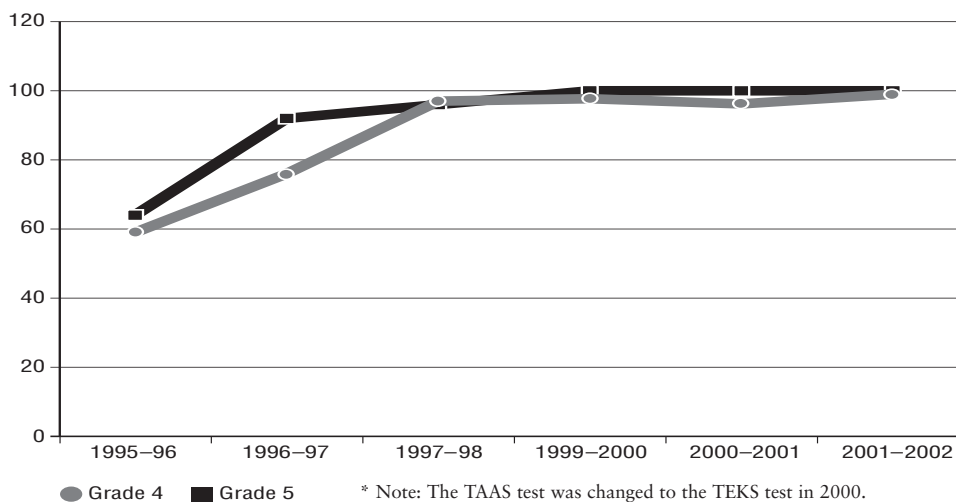
According to Earl Snyder, math specialist at Outley Elementary School, the only change in the math curriculum in the 1996–97 school year was the implementation of *Every Day Counts*.

Lillie Beth Wilson, Principal of Outley Elementary School commented “[*Every Day Counts*] is a wonderful program... It brings lifetime skills into the program. The teachers enjoy it. It does enhance the quality of our math program. It makes math meaningful for the students each and every day.”

Outley Elementary TAAS* Scores

Grade	Percent of students passing the TAAS					
	1995–96	1996–97	1997–98	1999–2000	2000–01	2001–02
4	59	76	97	97.7	96.2	99
5	64	92	96	100	100	100

Percentage of Students Passing the TAAS*



EVERY DAY COUNTS® CASE STUDIES

Lafayette Parish School

Lafayette, LA

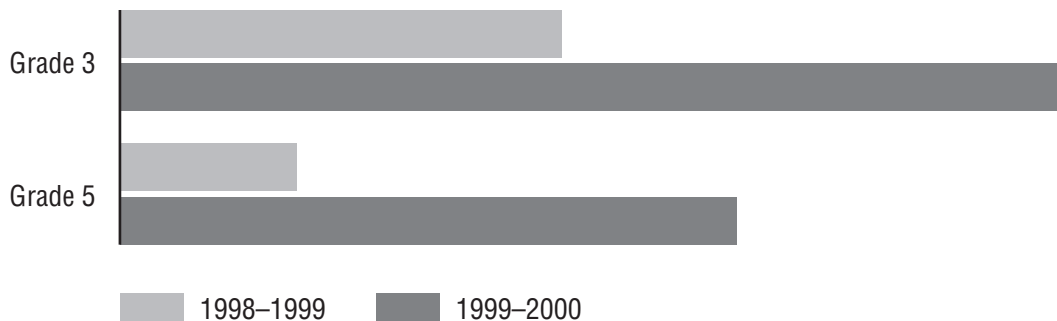
The following information was compiled by Patricia Ann Sonnier, PreK–5 Instructional Supervisor for an internal evaluation of *Every Day Counts* to Dr. James H Easton, Superintendent of Lafayette Parish School Board.

The following information was gathered using the average third and fifth grade Iowa Test Scores for the 1998–1999 school year before any *Every Day Counts* inservice was held. The scores were gathered on the average student scores of those teachers who received training and remained at their same grade level and school. We were able to compare these scores to the 1999–2000 school year.

Lafayette Parish School Iowa Test Scores

Grade	National Percentile Ranking	
	1998–1999	1999–2000
GRADE 3	49	57
GRADE 5	47	52

Grades 3 and 5 Iowa Test Scores



Sacajawea Elementary School

Great Falls, MT

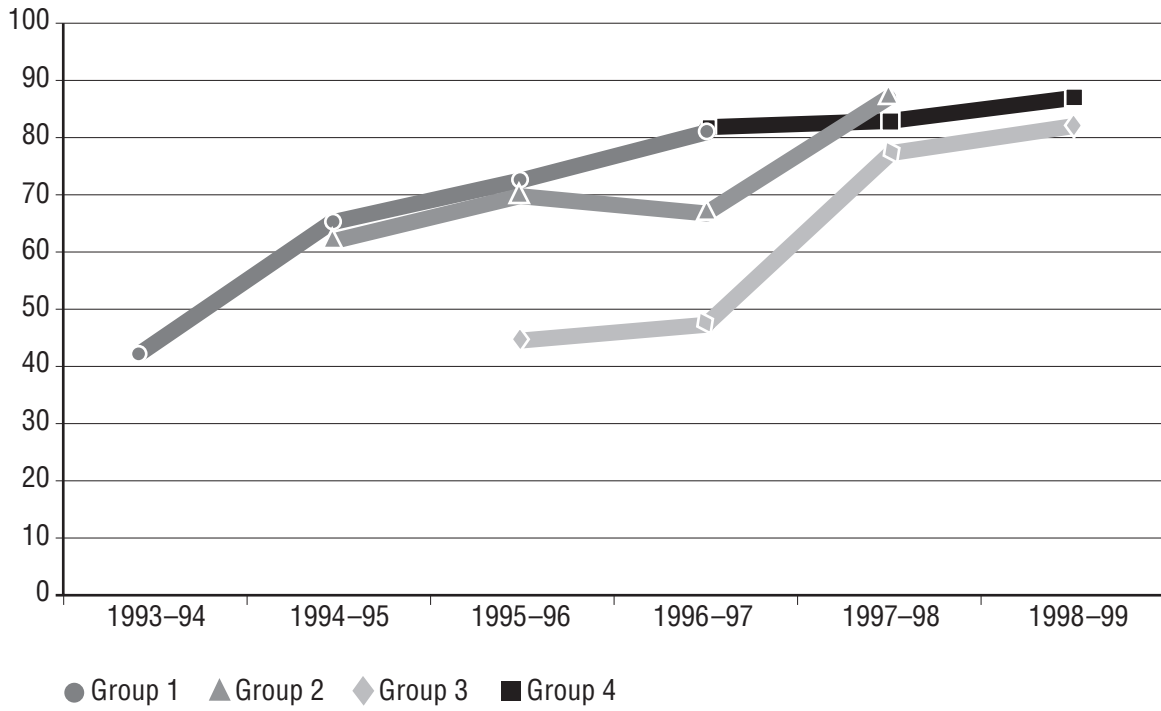
Student test scores on the Iowa Test of Basic Skills (ITBS) have increased at the Sacajawea Elementary School since the school first implemented *Every Day Counts* during the 1993–1994 school year. Starting with just a few elements from the program during the first year, the school eventually moved on to full K–5 implementation the following school year. Student test scores on the ITBS have increased as students progressed from grade 2 through grade 5 using *Every Day Counts*.

Everett Hall, teacher at Sacajawea Elementary School claims, “The daily practice and discussion not only reinforces needed math skills but it also serves to put math into a ‘real world’ and practical experience. Additionally, [*Every Day Counts*] serves as a conduit for pre-learning skills that will be reinforced at a later time.”

Sacajawea Elementary School, Great Falls, MT

Year	ITBS Scores			
	Group 1	Group 2	Group 3	Group 4
1993–94	41	–	–	–
1994–95	65	62	-	–
1995–96	72	70	45	–
1996–97	81	67	47	82
1997–98	–	87	78	83
1998–99	–	–	82	87

ITBS Scores by Group of Students



Independent School District

Alief, TX

All 21 elementary schools in the Alief Independent School District use *Every Day Counts*. There are 23,000 students in grades K–6 and 10,000 of the students using *Every Day Counts* are either bilingual or ESL students. The following information shows the significant improvement of TAAS (Texas Assessment of Academic Skills, the state’s required standardized test) scores in mathematics strands that are relevant to inquiry, reasoning, and problem solving from 1994–1996.

TAAS Objectives

Objective 10: The student will estimate solutions to a problem situation.

Objective 11: The student will determine solution strategies and will analyze or solve problems.

Objective 12: The student will express or solve problems using mathematical representations.

Objective 13: The student will evaluate the reasonableness of a solution to a problem situation.

The scores below reflect the percentage of students who took the test and achieved mastery in the first three years of implementation.

Grade Levels	1994	1995	1996
Grade 3			
Objective 10 & 13	55%	54%	58%
Objective 11	64%	69%	77%
Objective 12	61%	74%	70%

Grade Levels	1994	1995	1996
Grade 4			
Objective 10 & 13	38%	45%	52%
Objective 11	61%	64%	74%
Objective 12	64%	67%	78%

Grade Levels	1994	1995	1996
Grade 5			
Objective 10	67%	79%	77%
Objective 11	70%	70%	73%
Objective 12	62%	68%	68%
Objective 13	63%	83%	77%

Warren Consolidated Schools

Warren, MI

Warren Consolidated Schools has been using *Every Day Counts* since the 1994–1995 school year. The school implemented the program in grades K–5 and recorded increased student test scores on the MEAP state assessment tests with continued use of *Every Day Counts*.

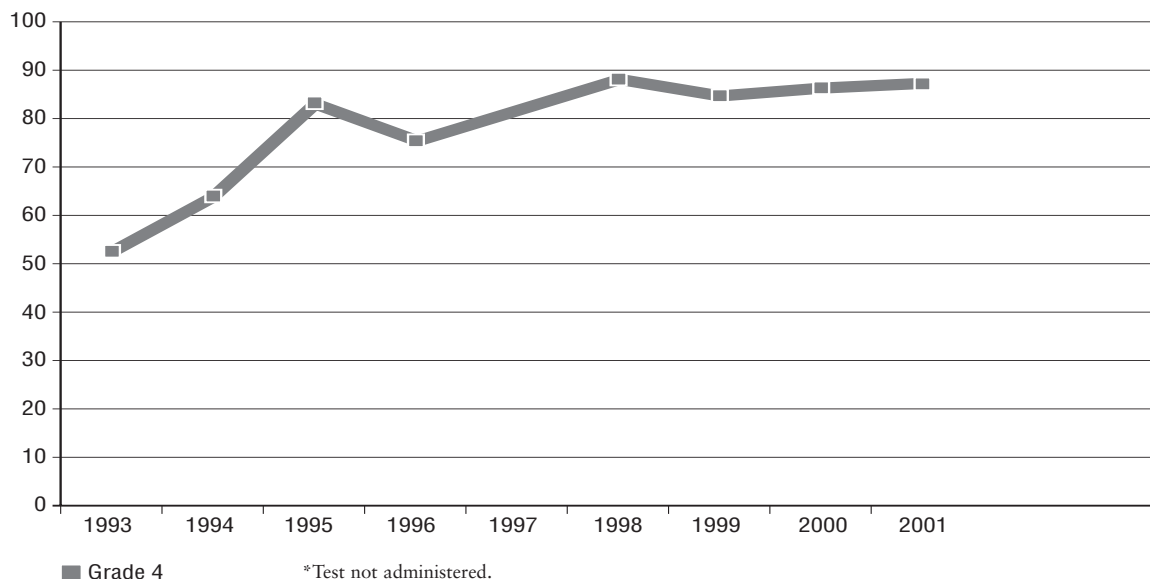
According to Jean Banta, third grade teacher in Warren, MI, “Students at all levels participate enthusiastically with *Every Day Counts*. [Math] terms have become meaningful to the students. I find the students using the materials to develop high level thinking skills in areas like money and patterns.”

Warren Consolidated Schools MEAP Scores

Percentage of Grade 4 students passing the MEAP test

1993	1994	1995	1996	1997	1998	1999	2000	2001
52.4	64.3	83.2	76.4	*	88.9	85.4	87.4	87.6

Percentage of Grade 4 Students Passing the MEAP Test



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