

# SuccessMaker<sup>®</sup> Mathematics

## Evidence of Effectiveness

### A Summary of the Randomized, Control Trial Conducted by Gatti Evaluation, Inc.

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#### **SuccessMaker Math Summative Research Overview**

Pearson Digital Learning strongly believes that its programs should be proven through scientific research to increase student achievement. As such, it contracted with independent research group Gatti Evaluation, Inc., to conduct a randomized, control trial of its *SuccessMaker Math* program. The study was conducted in 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> grade classrooms over the 2009-10 school year. This report summary presents the evaluation design and methods, an assessment of program usage and implementation, student performance results, and a discussion of findings.

#### **Study Design and Research Questions**

The purpose of this study was to assess the effectiveness of the *SuccessMaker Math* program in helping students attain critical math skills and to document usage and implementation of the *SuccessMaker Math* program. The study employed an experimental randomized, control trial research design. That is, teachers within each research school were *randomly assigned* to either use the *SuccessMaker Math* program with their students (also referred to as the “treatment” group) or to refrain from using the *SuccessMaker Math* program (also referred to as the “comparison” condition). Teachers assigned to the comparison condition continued usage of their current print supplemental math program.

The study addressed the following overarching evaluation questions:

1. How does the math performance of students using *SuccessMaker Math* compare to that of students using print supplemental math programs?
2. How is the *SuccessMaker Math* program implemented?
3. How does the academic attitudes of students using *SuccessMaker Math* compare to that of students using print supplemental math programs?
4. What are teachers’ perceptions of the quality and utility of the *SuccessMaker Math* program?

## Participants and Setting

Gatti Evaluation recruited ten schools to participate in the study, including schools in AR, AZ, CA, IN, KS, NY, and PA. The final analytic sample was comprised of 63 classrooms and 1,184 students. The study schools were members of public school districts located in suburban and urban-fringe areas. The study sample demonstrated considerable variation in ethnicity, socioeconomic status as evidenced by eligibility for free or reduced lunch status, and English language learner status, as well as a wide range of math ability levels as evidenced by previous year state math assessment data. Figure 1 presents the full study sample demographics broken out by school.

**Figure 1. Gatti Evaluation SuccessMaker Math RCT Sample Demographic Information**

| District            | Group      | Grade | Student Count* | % One Grade Equivalent Below** | % Not English Proficient | % Reduced Lunch | % Caucasian | % Hispanic/ Native American | % African American/ Caribbean | Other Ethnicity or No Information |
|---------------------|------------|-------|----------------|--------------------------------|--------------------------|-----------------|-------------|-----------------------------|-------------------------------|-----------------------------------|
| Arizona District 1  | SM         | 3     | 30 (73%)       | 47%                            | 57%                      | 97%             | 17%         | 63%                         | 13%                           | 7%                                |
|                     | Comparison |       | 15 (68%)       | 53%                            | 33%                      | 100%            | 13%         | 80%                         | 7%                            | 0%                                |
|                     | SM         | 7     | 22 (69%)       | 55%                            | 23%                      | 91%             | 9%          | 77%                         | 14%                           | 0%                                |
|                     | Comparison |       | 42 (72%)       | 57%                            | 24%                      | 93%             | 14%         | 79%                         | 0%                            | 7%                                |
| Arizona District 2  | SM         | 3     | 44 (69%)       | 45%                            | 48%                      | 86%             | 5%          | 93%                         | 2%                            | 0%                                |
|                     | Comparison |       | 43 (68%)       | 74%                            | 53%                      | 95%             | 5%          | 84%                         | 9%                            | 2%                                |
|                     | SM         | 5     | 38 (76%)       | 45%                            | 50%                      | 87%             | 5%          | 87%                         | 5%                            | 3%                                |
|                     | Comparison |       | 42 (82%)       | 83%                            | 38%                      | 86%             | 10%         | 86%                         | 2%                            | 2%                                |
|                     | SM         | 7     | 67 (74%)       | 46%                            | 33%                      | 84%             | 4%          | 91%                         | 4%                            | 1%                                |
|                     | Comparison |       | 59 (81%)       | 53%                            | 25%                      | 95%             | 7%          | 86%                         | 5%                            | 2%                                |
| Arkansas District   | SM         | 3     | 64 (97%)       | 8%                             | 2%                       | 9%              | 89%         | 2%                          | 5%                            | 4%                                |
|                     | Comparison |       | 43 (96%)       | 7%                             | 2%                       | 21%             | 95%         | 2%                          | 0%                            | 3%                                |
|                     | SM         | 5     | 49 (98%)       | 12%                            | 4%                       | 12%             | 88%         | 4%                          | 2%                            | 6%                                |
|                     | Comparison |       | 43 (91%)       | 9%                             | 7%                       | 12%             | 93%         | 0%                          | 0%                            | 7%                                |
| California District | SM         | 3     | 38 (90%)       | 68%                            | 0%                       | 79%             | 0%          | 100%                        | 0%                            | 0%                                |
|                     | Comparison |       | 57 (95%)       | 35%                            | 0%                       | 78%             | 0%          | 100%                        | 0%                            | 0%                                |
|                     | SM         | 5     | 24 (100%)      | 46%                            | 0%                       | 63%             | 4%          | 96%                         | 0%                            | 0%                                |
|                     | Comparison |       | 24 (96%)       | 46%                            | 0%                       | 63%             | 8%          | 92%                         | 0%                            | 0%                                |
| Indiana District    | SM         | 3     | 29 (76%)       | 31%                            | 0%                       | 69%             | 93%         | 0%                          | 0%                            | 7%                                |
|                     | Comparison |       | 16 (89%)       | 50%                            | 6%                       | 69%             | 88%         | 6%                          | 0%                            | 6%                                |
|                     | SM         | 5     | 36 (90%)       | 47%                            | 8%                       | 83%             | 83%         | 3%                          | 3%                            | 11%                               |
|                     | Comparison |       | 16 (84%)       | 25%                            | 0%                       | 69%             | 100%        | 0%                          | 0%                            | 0%                                |
| Kansas District     | SM         | 3     | 41 (95%)       | 44%                            | 0%                       | 56%             | 54%         | 24%                         | 15%                           | 7%                                |
|                     | Comparison |       | 19 (95%)       | 63%                            | 0%                       | 79%             | 47%         | 37%                         | 11%                           | 5%                                |
|                     | SM         | 5     | 43 (98%)       | 28%                            | 0%                       | 49%             | 63%         | 26%                         | 7%                            | 4%                                |
|                     | Comparison |       | 20 (91%)       | 35%                            | 0%                       | 60%             | 60%         | 10%                         | 25%                           | 5%                                |
|                     | SM         | 7     | 48 (81%)       | 74%                            | 0%                       | 83%             | 45%         | 32%                         | 23%                           | 0%                                |
|                     | Comparison |       | 36 (80%)       | 50%                            | 0%                       | 78%             | 42%         | 33%                         | 19%                           | 6%                                |

|                       |            |   |          |     |    |      |     |     |     |    |
|-----------------------|------------|---|----------|-----|----|------|-----|-----|-----|----|
| New York District     | SM         | 3 | 15 (94%) | 27% | 0% | 87%  | 0%  | 60% | 40% | 0% |
|                       | Comparison |   | 11 (79%) | 73% | 0% | 100% | 0%  | 64% | 36% | 0% |
|                       | SM         | 5 | 13 (68%) | 62% | 0% | 85%  | 0%  | 54% | 46% | 0% |
|                       | Comparison |   | 20 (95%) | 90% | 0% | 90%  | 0%  | 45% | 55% | 0% |
| Pennsylvania District | SM         | 3 | 21 (91%) | 38% | 0% | 62%  | 43% | 0%  | 52% | 5% |
|                       | Comparison |   | 19 (90%) | 32% | 0% | 58%  | 42% | 0%  | 58% | 0% |
|                       | SM         | 5 | 21 (91%) | 38% | 0% | 81%  | 38% | 0%  | 62% | 0% |
|                       | Comparison |   | 19 (90%) | 0%  | 0% | 58%  | 42% | 0%  | 58% | 0% |

\*Percents within parentheses next to student counts indicate the percent of students tested at baseline that were also tested at the end of the school year.

\*\*Study sample was broken out by baseline **GMADE** national norm cutoff score for 1.0 grade equivalent below grade and month at the time of testing.

## Measures

Multiple measures were used to assess student achievement, program implementation, and student attitudes.

Evaluators selected the Group Mathematics Assessment and Diagnostic Evaluation (GMADE) to measure changes in student math skills because of its broad visibility and acceptance in the field, high technical merit, and alignment to state standards. The GMADE is a standardized, norm-referenced assessment that is group-administered. It offers parallel forms, with Form A administered within one month of the start of school and Form B administered within one month of the conclusion of school. The GMADE is not a timed test, but generally takes 60 – 90 minutes to complete. The GMADE offers an overall Math score, as well as three subtests; Concepts and Communication, Operations and Computation, and Process and Applications. The subtests address students' knowledge of mathematics facts and language, use of basic computational algorithms and operations, and the ability to solve problems presented in written form, respectively.

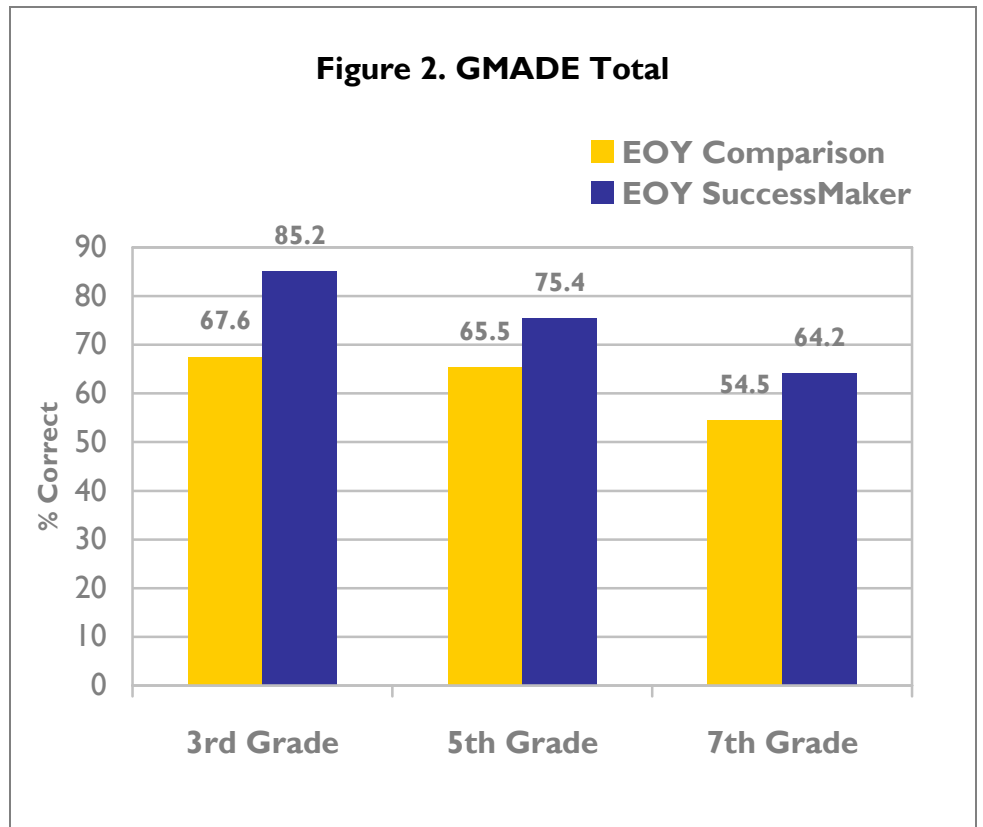
In order to measure program implementation and teacher perceptions, evaluators collected data through observations, surveys, and interviews with math teachers. Math teachers (treatment and comparison) also completed weekly implementation logs and *SuccessMaker Math* school liaisons downloaded monthly usage logs. This information provided researchers with a detailed data source on what was occurring in treatment and comparison classrooms in terms of math instruction, and allowed researchers to identify areas of overlap in terms of content taught and activities. The biannual classroom observations and interviews with classroom teachers provided critical insight into the nature of use and the effectiveness of the math materials used with treatment and comparison students.

Additionally, student academic attitude surveys were administered in Fall 2009 and Spring 2010. The survey was developed by Gatti Evaluation, and included questions related to general math attitude, confidence, motivation, and self-perceived aptitude.

## Student Performance Results

### *Results for All SuccessMaker Math Users versus Print Supplemental Math Programs*

Evaluators conducted analyses to examine how *SuccessMaker Math* students performed in comparison to students using print supplemental math programs. Results showed positive effects of the *SuccessMaker Math* program. Students who used *SuccessMaker Math* experienced significantly greater gains on the GMADE Total than their peers using print math supplemental programs at 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> grades. These results can be seen in Figure 2. In Figure 2, the average percent correct on the posttest of the GMADE Total score is graphed after adjusting for differences in baseline student and classroom characteristics.

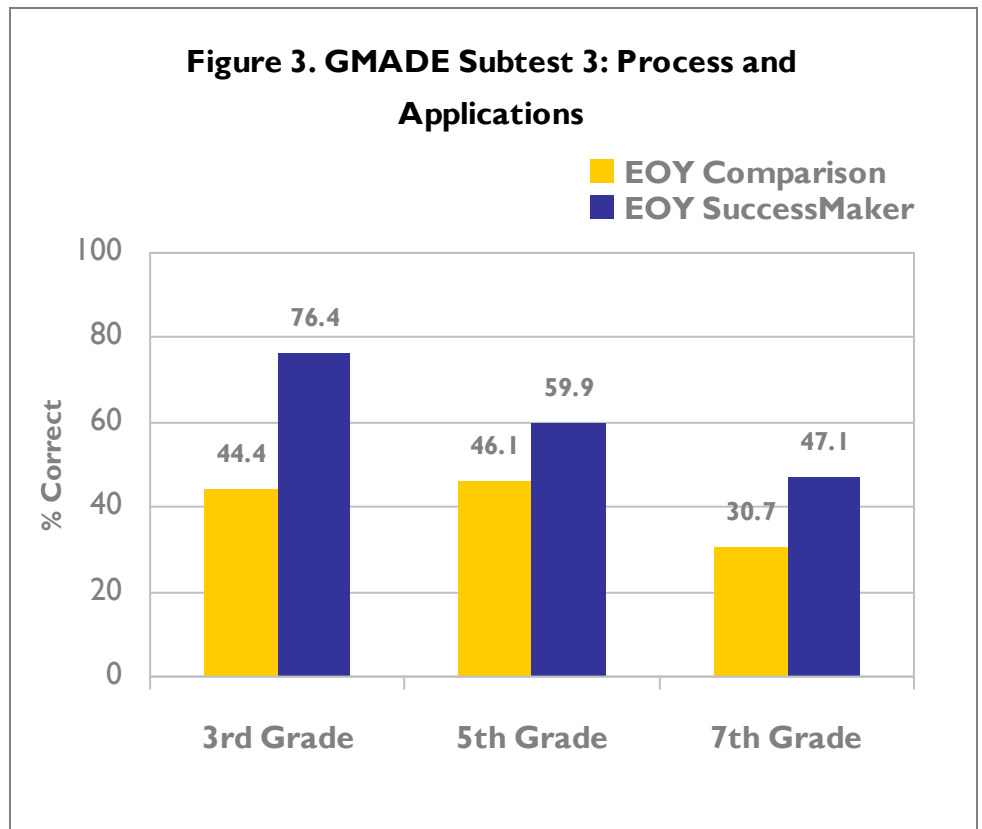


After adjusting for student & classroom characteristics, 3rd, 5th & 7th grade *SuccessMaker Math* users out scored their comparison group counterparts by 17.5% (SE=2.19%), 10.0% (SE=2.72%) and 9.8% (SE=2.23%) respectively.

The results are both statistically significant and educationally meaningful, as evidenced by large effect sizes at each grade (3<sup>rd</sup> grade  $d = 1.00$ , 5<sup>th</sup> grade  $d = .53$ , and 7<sup>th</sup> grade  $d = .61$ ).

Evaluators also conducted analyses on the GMADE subtests by grade level. The 3<sup>rd</sup> and 7<sup>th</sup> grades performed similarly on the Concepts and Communication subtest, and the 5<sup>th</sup> grade

comparison group outperformed the treatment condition. The 3<sup>rd</sup> and 5<sup>th</sup> grade SuccessMaker students outperformed their comparison group peers on the Operations and Computation subtest, while the 7<sup>th</sup> grade groups performed similarly. Finally, the SuccessMaker students outperformed their comparison group peers at all grade levels on the Process and Applications subtest with particularly large effect sizes (3<sup>rd</sup> grade  $d = 1.32$ , 5<sup>th</sup> grade  $d = .59$ , and 7<sup>th</sup> grade  $d = 1.01$ ). These findings lend support to the conclusion that the *SuccessMaker Math* program has a positive impact on student math performance.

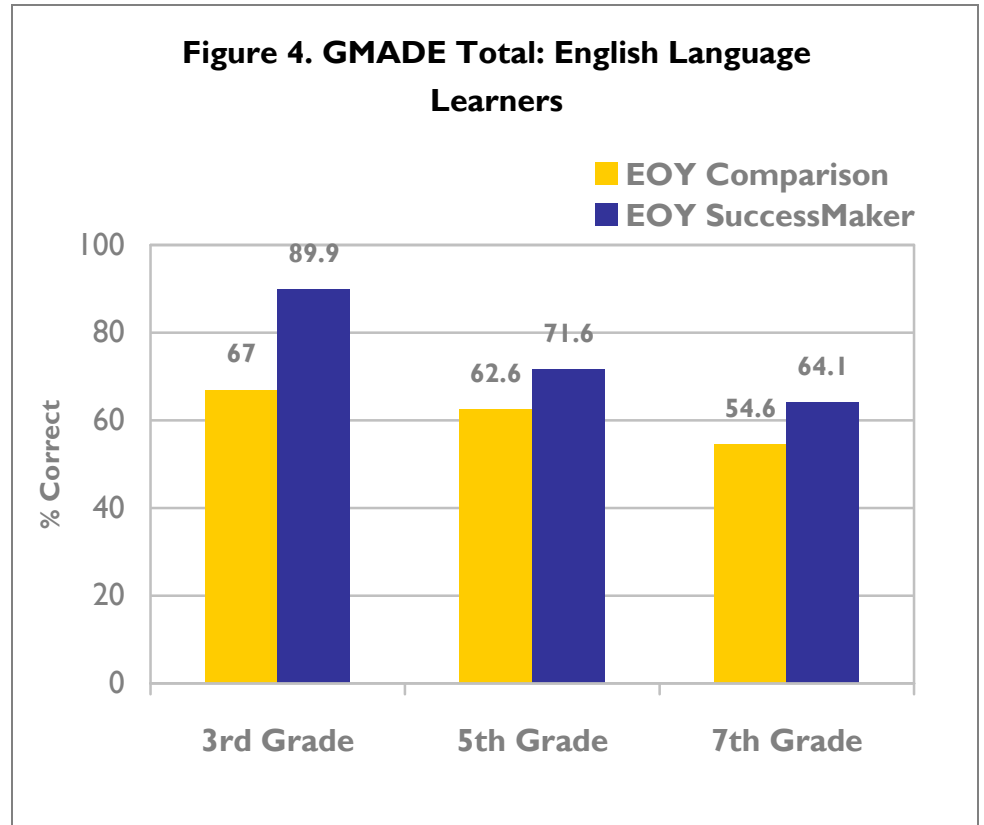


After adjusting for student and classroom characteristics, 3rd, 5th and 7th grade SuccessMaker Math users outscored their comparison group counterparts by 32.0% (SE=3.71%), 13.8% (SE=2.58%) and 16.4% (SE=3.62%) respectively.

#### *Results for Subgroups: SuccessMaker Math versus Print Supplemental Math Programs*

Evaluators also analyzed subgroup differences between *SuccessMaker Math* and print supplemental math programs. Results showed a significant difference between *SuccessMaker Math* students and students using print supplemental math programs in the following 3rd grade subgroups: lower achieving students, male, female, eligible for reduced lunch, full-priced lunch, not English proficient, English proficient, Hispanic, and Caucasian. At 5<sup>th</sup> grade, the following subgroup analyses were significant:

male, female, eligible for reduced lunch, full-priced lunch, not English proficient, English proficient, and Caucasian. Finally, at 7<sup>th</sup> grade, the following subgroup analyses were significant: male, female, eligible for reduced lunch, full-priced lunch, not English proficient, and English proficient. In all cases of significant differences for subpopulation analyses, the *SuccessMaker Math* students outperformed their peers using print supplemental math programs.



After adjusting for student & classroom characteristics, 3rd, 5th & 7th grade SuccessMaker Math ELL users outscored their comparison group counterparts by 22.9% (SE=2.81%, n=69), 9.0% (SE=2.33%, n=43) and 9.6% (SE=3.49%, n=52) respectively.

### *SuccessMaker Math Implementation*

The majority of the teachers implemented the *SuccessMaker Math* program in a computer laboratory environment, typically implementing the program two to three days per week for an average of 24 minutes per session. Ten study teachers implemented *SuccessMaker Math* more than three sessions per week. Three teachers implemented *SuccessMaker Math* jointly in their classrooms and the computer laboratory. Third and 5<sup>th</sup> grade teachers generally supplemented their core math instruction with *SuccessMaker Math*, while 7<sup>th</sup> grade teachers tended to implement *SuccessMaker Math* during their daily math block.

*“I think it’s [SuccessMaker Math] a very essential tool for students that are at different levels.”*

**–7<sup>th</sup> Grade  
SuccessMaker Teacher**

*“It’s good because you feel like everyone got what they needed.. like SuccessMaker was your co- teacher.”*

**–3rd Grade  
SuccessMaker teacher**

*“Some of my kids are very hard to motivate, but with SuccessMaker they will do it. So if I can link what we are doing in the classroom with what they did in SuccessMaker, they are automatically more interested.”*

*“I saw the kids picking up a lot more English.”*

**–3rd Grade  
SuccessMaker teachers**

## Participant feedback

### *Student Attitudes*

In addition to providing evidence of efficacy, Gatti Evaluation investigated other outcomes associated with use of the *SuccessMaker Math* program. The full results of the report, Pearson *SuccessMaker Math* Efficacy Study, are available on the *SuccessMaker* product website ([www.SuccessMaker.com](http://www.SuccessMaker.com)).

A student math academic attitude survey was administered to *SuccessMaker Math* and comparison students at the beginning and end of the year to examine changes in student attitudes. The survey was designed to measure general math attitude, confidence, motivation, and self-perceived aptitude. The 3<sup>rd</sup> and 7<sup>th</sup> grade *SuccessMaker Math* students had significantly higher attitudes than their comparison group peers, while the 5<sup>th</sup> grade *SuccessMaker Math* and comparison students reported similar attitudes.

In addition, the survey results indicated 93% of 3<sup>rd</sup> grade, 79% of 5<sup>th</sup> grade, and 88% of 7<sup>th</sup> grade students indicated they liked using the *SuccessMaker Math* program.

### *Teacher Attitudes*

The teacher response to the *SuccessMaker Math* program was overwhelmingly positive with 80% of focus group responses rated as positive in nature. Teachers particularly enjoyed the:

- Interactive nature of the *SuccessMaker Math* program,
- Opportunity for differentiated instruction,
- Immediate feedback, and
- The high levels of student engagement.

The majority of teachers felt *SuccessMaker Math* was aligned to both state and district educational objectives, as well as to curriculum content. The teachers reported *SuccessMaker* exposed their students to new concepts and content, while also reinforcing skills already taught in class.

The reporting features were also well-received. The teachers most often used the reports to identify children for remediation and to monitor student progress. The reports were also shared with curriculum specialists and parents to convey student progress.

A majority of the teachers reported the program challenged both their special needs and higher achieving student populations. Teachers felt *SuccessMaker Math* was more engaging and challenging than their previous print and computer-based supplements, was helpful for ELL students and struggling readers, and an overall good educational investment.

## Conclusion

The breadth and depth of research that supports this program provides evidence that *SuccessMaker Math* is effective at increasing student math achievement. In addition, independent evaluators found that *SuccessMaker Math* students statistically outperformed students using print supplemental math programs. Teachers and students using *SuccessMaker Math* reported satisfaction with the program. In sum, scientific research indicates that the *SuccessMaker Math* program is an effective and useful program for both teachers and students.

## About Gatti Evaluation, Inc.

Gatti Evaluation was founded in 2003 to provide assistance in researching current topics in education and biomed. Gatti has extensive experience managing and consulting larger research projects for Fortune 500 companies and major academic institutions. Gatti researchers hold advanced degrees in Research Methods and Education. They also collaborate with numerous hand-picked, world-renowned researchers, practitioners, and academic research centers. Learn more at [www.GattiEval.com](http://www.GattiEval.com).

**To learn more about the SuccessMaker program, visit us at [www.SuccessMaker.com](http://www.SuccessMaker.com) and to access the full report, go to [www.PearsonSchool.com/SMMathStudy](http://www.PearsonSchool.com/SMMathStudy).**