

Research Summary
Grades 2–8



RESEARCH SUMMARY: INDEPENDENT ARTICLES

**Independent Articles and
Articles with Independent Measures**

Vmath Independent Articles and Articles with Independent Measures

Independent Articles

Harris, T. D. (2011). *An integrated learning system: Impact on at-risk students' ninth grade TAKS mathematics achievement* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3483143)

- This study examined two groups: students enrolled in both a remedial computer-assisted math lab class using *Vmath*® and an Algebra 1 class (treatment) and students enrolled in an Algebra 1 class only (control group). TAKS data were utilized to determine if any differences in student achievement were found between the two groups.
- The participants of this study were 1,676 ninth grade students in five high schools in a north Texas suburban school district. Students were placed into the treatment group by the district based on the following factors: failed the eighth grade mathematical portion of the TAKS test; failed the eighth grade math class; and teacher recommendation. The treatment group was made up of 192 ninth grade students considered at risk of academic failure. The majority of the treatment group was Hispanic (46.4%) and Black/African American (38.5%) with 77.1 percent economically disadvantaged. No specific mention was made of the number of students receiving special education services.
- Using an ex post facto design, the quantitative study used an ANOVA with multiple regressions. The TAKS mathematics test scores from 2009 were compared with TAKS mathematics scores from 2010. The findings showed a statistically significant difference ($p < .05$) on the achievement in mathematics between the treatment and control groups. Using the Texas Growth Index (TGI), the treatment group showed performance growth of .369, meaning the performance grew more than expected, versus a control group decline of performance growth of $-.596$, meaning the performance grew less than expected. The study concluded that students considered at risk of academic failure in mathematics improved on the TAKS test with remediation and support from *Vmath*.

Horton, T. D. (2010). *The effect of an afterschool program on standardized testing and behavior of middle school at-risk students in a rural county in Georgia* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3412028)

- This study examined at-risk students who participated in the 21st Century Community Learning Center after-school program at two similar schools. Data from the 2007–08 and 2008–09 school years on the Criterion-Referenced Competency Tests (CRCT), the Georgia state assessment, were used to determine the effect of attending the after-school program. Students used the *Vmath* program for mathematics instruction during the after-school program.
- Overall 217 students were enrolled in the after-school program. Students attended the after-school program about 25 percent of the days it was available. A group of students, 58 in all, attended the program about 30 percent or more of the days it was available. CRCT scores for this group were analyzed.
- This study was a one-group, pre-treatment post-treatment design. A paired-sample two-tailed t-test was conducted to compare the treatment group's pre-treatment and post-treatment CRCT scale scores. Results showed there was a statistically significant scale score increase ($p < .05$) for the students attending the after-school program and using the *Vmath* product. A statistically significant increase ($p < .05$) also occurred for females using the *Vmath* product.

Pool, J. L., Carter, G. M., Johnson, E. S., & Carter, D. R. (2013). The use and effectiveness of a targeted math intervention for third graders. *Intervention in School and Clinic, 48*(4), 210-217. doi:10.1177/1053451212462882

- This article describes a Tier 2 intervention using *Vmath* with 10 third grade students at Mountain View Elementary, a K–5 school located in the U.S. Northwest. From the Abstract:

Students who fail to develop proficiency in math skills in the primary grades are more likely to experience difficulties in the math curriculum later on. These students may be in need of a more targeted intervention, or Tier 2 supports, in mathematic instruction. Although the instructional principles of an effective math intervention are becoming better understood, the practice of designing and implementing an effective Tier 2 math intervention system challenges many schools. This article documents a case study of one school's experience in designing a Tier 2 math intervention system for 10 third graders to provide a model of effective Tier 2 systems.

UpFront Consulting. (2013). *Math Corps evaluation: 2011–12 findings report for programs using Voyager*. St. Joseph, MN: Author.

- During the 2011–12 school year in east central Minnesota, 251 students in eight schools in grades 4–6 received math tutoring using *Vmath* through the state's Math Corps program. Students received approximately 30 minutes of tutoring per day (in groups of 2–3 students) based on risk level for passing the Minnesota Comprehensive Assessment, 3rd Edition (MCA-III). Students with a 26 percent to 74 percent chance of passing the MCA-III were considered Tier 2; students at the higher end of this tier were considered slightly at risk and were the primary focus for selection for the Math Corps. Students in the Math Corps group who received *Vmath* tutoring were mostly white (72%) and female (61%).
- In 2012, MCA-III test results showed that 62 percent of fourth grade students (n = 99) who received *Vmath* instruction passed the state test with a score of 50 or more; 42 percent of fifth grade students (n = 86) passed; and 33 percent of sixth grade students (n = 58) passed. Students also took the Measures of Academic Progress (MAP) from Northwest Evaluation Association (NWEA) three times throughout the 2011–12 school year: fall, winter, and spring. NWEA provides growth targets or norms for each student's score. Based on this information, a very high percentage of students met or exceeded the growth target for their beginning score and grade level. In fact, 83 percent of fourth grade students (n = 99), 84 percent of fifth grade students (n = 85), and 83 percent of sixth grade students (n = 58) met or exceeded the MAP targets. Minnesota Math Corps fourth grade students demonstrated a 16.4 average point gain compared with the national average gain of 8.7 points, gaining 7.7 points more than expected. Fifth grade students gained 15.9 points, exceeding the national average gain by 7.8 points, and sixth grade students gained 10.3 points, exceeding the national average gain by 4.3 points.

UpFront Consulting. (2013). *Math Corps final year-end evaluation: 2011–12 findings report*. St. Joseph, MN: Author.

- During the 2011–12 school year, Minnesota implemented the Math Corps program where students who were at risk of not passing the Minnesota Comprehensive Assessment, Third Edition (MCA-III), received tutoring using research-based curriculum. This report evaluates two different curricula: *Vmath* (Cambium Learning Group), used by approximately 251 students in grades 4–6 in eight schools, and *Math Elevations* (Northpoint Horizons), used by approximately 1,193 students in grades 4–8 in seven districts. For this comparison, only grades 4–6 are compared between the two curricula. Approximately 649 students received *Math Elevations* in grades 4–6.
- *Vmath* students received approximately 30 minutes of tutoring per day in groups of two to three students. The *Math Elevations* tutors scheduled a minimum of 90 minutes of one-on-one tutoring with each participating student each week. The Math Corps program was intended to work primarily with students who had received scores between 40 and 49 on the 2011 MCA-III administration, but in actuality, 23 percent of the *Vmath* students and 26 percent of the *Math Elevations* students had scores of 39 or lower.
- On the MCA-III, a greater percentage of students in each grade level (4–6) who received *Vmath* instruction achieved a score of proficient or better. In fourth grade 62 percent of *Vmath* students scored proficient or above, compared with 45 percent of *Math Elevations* students. In fifth grade, 42 percent of *Vmath* students scored proficient or above, compared with 18 percent of *Math Elevations* students. In sixth grade, 33 percent of *Vmath* students scored proficient or above, compared with 24 percent of *Math Elevations* students. On the MAP, NWEA provides growth targets (or norms) for each student's score. A greater percentage of students who received *Vmath* instruction met or exceeded the MAP growth targets. Specifically, 83 percent, 84 percent, and 83 percent of fourth, fifth, and sixth grade *Vmath* students met or exceeded MAP targets for growth, compared with 72 percent, 78 percent, and 67 percent of *Math Elevations* students. Finally, the national average gain on the MAP test was 8.7, 8.1, and 6.0 for fourth, fifth, and sixth grade students, respectively. Both *Vmath* and *Math Elevations* students outgained the national average. *Vmath* students outgained the *Math Elevations* students in every grade. *Vmath* students' average gain was 16.4, 15.9, and 10.3 in fourth, fifth, and sixth grades, respectively. *Math Elevations* students' average gain was 13.4, 13.3, and 9.0 in fourth, fifth, and sixth grades, respectively.

Internal Articles with Independent Measures

Peyton, J. A., & Macpherson, J. R. (2008). *Students receiving special education services succeed on OCCT after using Vmath math intervention*. Dallas, TX: Voyager Sopris Learning.

- This report refers to three groups of students attending Poteau School District in Oklahoma. All three groups were receiving special education services and also received *Vmath* instruction. The district provided the Oklahoma Core Curriculum Tests (OCCT) information for each of these groups of students. During the 2006–2007 school year students received *Vmath* instruction.

- On the 2006 OCCT, prior to implementing *Vmath*, third grade students receiving special education services passed at a rate of 48 percent (10 out of 21 students). On the 2007 OCCT, after implementing *Vmath*, fourth grade students passed at a rate of 69 percent (15 out of 22 students). The passing rate of fourth grade students receiving special education services in 2006 was 73 percent (13 out of 18 students). After implementing *Vmath*, fifth grade students passed at a rate of 88 percent (14 out of 16 students). For high school students receiving special education services, in 2006 only one student (4%) passed the End of Instruction test for Algebra 1. In 2007, after adding *Vmath* to the services these students received, five out of 12 students (42%) passed the End of Instruction test for Algebra 1.

Macpherson, J. R. (with Martz, G., & Deforest, D.) (2009). *Math intervention at Cascade Middle School*. Dallas, TX: Voyager Sopris Learning.

- This report presents the background, processes, and results of the successful math intervention, using *Vmath*, at Cascade Middle School. Students targeted for the *Vmath* intervention were in the Nearly Meets population on the Oregon Assessment of Knowledge and Skills (OAKS) state test from the previous year. On average, about 20 percent of the student population at Cascade Middle School received special education services.
- During the 2007–08 school year, 23 percent (93 out of 401 students) in grades 6–8 received *Vmath* instruction. On the OAKS, 52 percent of the *Vmath* students passed the math portion of the test with a Meets or Exceeds status. During 2008–09 school year, 34 percent (133 out of 392 students) in grades 6–8 received *Vmath* instruction. On the OAKS, 60 percent of the *Vmath* students passed the math portion of the test.