

Research Summary
Grades 5-10

TRANSMATH[®]

Research Summary:
Independent Articles
and Articles with
Independent Measures

TransMath Research Summary: Independent Articles and Articles with Independent Measures

Independent Articles

Woodward, J. (2006). Developing automaticity in multiplication facts: Integrating strategy instruction with timed practice drills. *Learning Disability Quarterly, 29*, 269–289.

- This study contrasted two approaches to teaching multiplication facts. One approach was the more traditional timed practice drills. The other approach, incorporated into the *TransMath*® curriculum, integrates strategies instruction with frequent timed practice drills. Based on the scores on the Math Computations subtest of the Iowa Test of Basic Skills (ITBS), students were matched and randomly assigned to the integrated or the timed practice only groups. Each group received 25 minutes of instruction, five days a week, for four consecutive weeks.
- Two classrooms in a suburban school district in the Pacific Northwest participated in this study. A total of 58 fourth grade students participated with the following demographics: 57% qualified for free/reduced cost lunch; 36% were minorities, primarily African American; and 20% were receiving special education services and were classified as LD.
- The integrated group had better results over the timed practice only group on the common facts with small effect size ($d = .27$), extended facts with large effect size ($d = 1.09$), and approximation test with large effect size ($d = 1.68$). There were nonsignificant results, meaning neither group was better than the other, for harder multiplication facts and on the computations posttest. The author concludes that the differences between the integrated and timed practice only groups on the extended facts and approximations tests should be considered in the development of number sense. These strategies are included in the *TransMath* curriculum.

Woodward, J., & Brown, C. (2006). Meeting the curricular needs of academically low-achieving students in middle grade mathematics. *The Journal of Special Education, 40*(3), 151–159.

- The purpose of this quasi-experimental yearlong study was to examine the effects of two kinds of curricula on middle school students at risk for special education in mathematics. The intervention group used *TransMath* Level 1, which helped students build a conceptual foundation of whole number operations, number theory concepts, data analysis, measurement, and geometric concepts. The intervention group received 55 minutes of instruction daily. The comparison group used modules from the first level of the *Connected Mathematics* program (Prentice Hall, 2002). The program emphasized numbers and operations, measurement, geometry, data analysis, and probability. The comparison group received 80 minutes of instruction, 55 minutes with the curriculum and an additional 25 minutes of structured basic skills practice using materials developed by the district and not associated with *Connected Mathematics*.
- The participants in this study included 6 teachers and their 53 students in two middle schools, located in medium-sized, suburban school districts. In the intervention group, there were 25 students, 11 female and 14 male, with all students identified as having learning disabilities, mostly in reading. In the comparison group, there were 28 students, 15 female and 13 male, with 14 students identified as having learning disabilities. All of the students in both schools had been identified as needing intensive, remedial instruction in mathematics based on teacher recommendation and scores from the end of elementary school.
- Three measures were used to determine results. The CTB Terra Nova (McGraw-Hill, 2002), used to determine comparability of the two groups on a wide range of grade-level mathematics skills and concepts, showed significant differences between the two groups on the end-of-year test with a large effect size ($d = 1.23$). The Core Concepts Measure was developed for this study and was a 30-item test to measure the concepts taught that were common to both groups. Using the October CTB Terra Nova as a covariate, the Core Concepts Measure showed statistically significant results favoring the intervention group with a large effect size ($d = 1.61$). The final measure was a 20-item survey called Attitudes Toward Math, used to assess the general attitudes towards math, administered in October and June. The Attitudes Toward Math showed statistically significant results favoring the intervention group with a large effect size ($d = 1.95$). The authors state, “the pattern of results indicates that the curriculum that used research-based principles found in the special education literature [*TransMath*] tended to lead to superior achievement and attitudinal results by the end of the year” (p. 157). The authors further state, “these results occurred in spite of the fact that there was an additional 25 minutes of skills instruction per day for the comparison students” (p. 157).

Internal Articles with External Measures

Voyager Sopris Learning. (n.d.). *The School District of Lee County, Florida: TransMath: Retrospective evaluation with middle school students over two years*. Dallas, TX: Author.

- During the 2006–2007 and 2007–2008 school years, two middle schools in The School District of Lee County, Florida implemented *TransMath* for students who needed systematic help to build a solid foundation of basic skills and mathematical reasoning. Students were selected to take *TransMath* if they scored in Level 1 on the Florida Comprehensive Assessment Test (FCAT), based on teacher recommendation, or based on student scores in the core mathematics curriculum assessments. A total of 114 students received instruction during the two-year period. There were 79 students (69.3%) who had all three FCAT scores: spring 2006 (prior to *TransMath* instruction); spring 2007 (after the first year of *TransMath* instruction); and spring 2008 (after the second year of *TransMath* instruction).
- The demographic characteristics of the *TransMath* students included: 69% free/reduced cost lunch (FRL), 56% nonwhite, 7% limited English proficient (LEP), and 18% Exceptional Special Education (ESE). Students at Three Oaks Middle School received core mathematics instruction along with 45 minutes of *TransMath* instruction daily. Students at North Fort Myers Academy for the Arts received 90 minutes of *TransMath* instruction daily.
- After the first year of *TransMath* instruction, there were no significant gains in the FCAT developmental scale scores (DSS). After the second year of instruction, *TransMath* students made statistically significant growth, gaining an average of 158 DSS points. All subgroups made statistically significant growth, specifically: FRL students (n = 51) gained 164 DSS points; nonwhite students (n = 32) gained 144 DSS points; LEP students (n = 8) gained 186 DSS points; and ESE students (n = 13) gained 160 DSS points. When compared to other students in the district that qualified for FRL, the students receiving *TransMath* instruction outgained the district-wide average 158 to 114 DSS points.