Renaissance Independent Research Reports
From the collection of reports sent by independent researchers to:
Renaissance Learning • Educational Research Department
Number 35

Math Renaissance® Improves Student Achievement and Attitudes in Idaho School

Sources: David Forbush, school psychologist; Melinda Harris, fifth-grade teacher; Dr. Jerry Waddoups, district curriculum director; and Reid Carlson, principal

Note: The following is a summary of a report submitted to School Renaissance™ Institute by David Forbush.

Study Description

In January of the 1998–1999 school year, Accelerated Math® was purchased by Oakwood Elementary School in Preston, Idaho. Interest in Accelerated Math was initiated by Melinda Harris, a fifth-grade teacher, who agreed to pilot the program and compile preliminary data on the effects of Accelerated Math on student achievement in her classroom.

At the end of the four-month pilot study, STAR Math® standardized pretest and post-test results demonstrated enough growth to continue the evaluation. Due to the mounting interest in Accelerated Math from other teachers in the school, a research study with a pretest/post-test design and control groups involving all fifth-grade students was planned for the second semester of the 1999–2000 school year. Oakwood Elementary intended to make sure that Accelerated Math proved to be successful before fully investing in it.

Oakwood educators posed the following two research questions: "Do students make more academic progress in math in the Accelerated Math program than in the two other math programs used at Oakwood Elementary School?" and "Are the attitudes of students participating in Accelerated Math more positive toward math than (the attitudes of) students participating in the other two math programs?"

The Accelerated Math research project involved two experimental classrooms (Class A and Class B) and two control classrooms (Class C and Class D). The experimental cohort used Accelerated Math as their primary math program. The control cohort used math textbooks as the basis of their math programs.

All four classes were well matched on a number of different criteria: the teachers had comparable amounts of teaching experience, all classes had between 25–30 students, and the proportion of female to male students within the classes were similar.

In both experimental classrooms, the STAR Math standardized test was used to place students into their appropriate Accelerated Math library. All students were then allowed to progress through their proper Accelerated Math library at their own speed. The goal of finishing five math objectives a week was set for all students in both experimental classes, and a simple chart was used to track their progress.

During math time, all students in classes A and B were encouraged to ask for help when needed. Because Accelerated Math generates individualized practice sheets, students were able to work on the same math objective without sharing answers.

Finally, both teachers in the experimental classrooms attended a Math Renaissance professional development workshop in the fall of 1999, and had at least one year prior experience with Accelerated Math. In addition, the teacher in Class A was a certificated Renaissance™ Math Model teacher.[1]

Results

All students in the experimental and control classes were pretested and post-tested with four different instruments in order to obtain the most accurate picture of student growth. Four months elapsed between all pretesting and post-testing.

continued on reverse side

School Profile

Oakwood Elementary School
Preston, Idaho
Students: 550, 3–5
Socio-Economic Status:
- Rural, Title I
- Free or reduced Lunch: 49%

Limited English Proficiency: 2.5%
Race/Ethnicity:
- American Indian or Alaska Native: 0.5%
- Asian or Pacific Islander: 0.5%
- Black or African American: 0.5%
- Hispanic or Latino: 3.0%
- White: 95.5%

Educator Backgrounds

David Forbush is the director of special education and Title 1 coordinator for Preston School District. Forbush also works as a school psychologist at Oakwood Elementary School.

Melinda Harris is a fifth-grade teacher at Oakwood Elementary and the Renaissance trainer/coordinator for the Preston School District. She is one of the first Math Model Classroom teachers in the country.

Dr. Jerry Waddoups is the curriculum director for Preston School District.

Reid Carlson is the principal of Oakwood Elementary.

[1] To become a Renaissance-certified Math Model Classroom, educators must demonstrate that no more than ten percent of their students are at risk according to the Accelerated Math Diagnostic Report, and that on average, students are on track to finish one Accelerated Math grade-level library in one school year. Certifying teachers must also prove that they are actively pursuing a learning environment that incorporates Renaissance motivation techniques. Math Model Certification requires the submission of an Accelerated Math Diagnostic Report for a marking period, an extensive checklist identifying Renaissance practices implemented, an application, and a survey.

Three tests were used to measure academic growth: STAR Math, the End-of-Year Test[2] (McGraw-Hill Math Curriculum), and the Wide Range Achievement Test (WRAT). Test scores were analyzed by grouping Classes A and B into one category called "Experimental" and by grouping Classes C and D into another category called "Control". Weighted averages were taken of all pretest and post-test scores to accurately determine student growth over the semester. See graphs 1–3 for results.

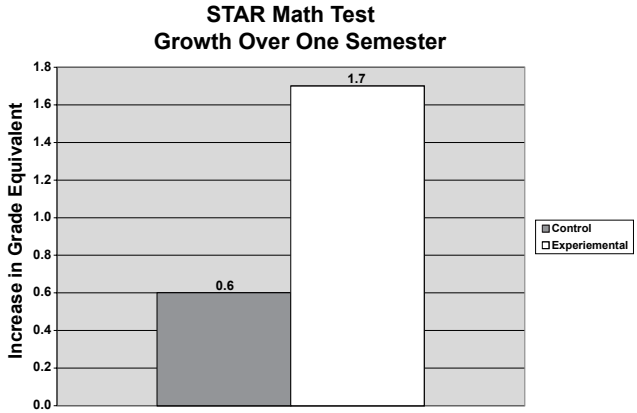
Finally, students were surveyed at the beginning and end of the research project in order to answer the research question, "Are the attitudes of students participating in Accelerated Math more positive toward math than (the attitudes of) students participating in the other two math programs?" The survey consisted of eight questions, which were based on a four-point scale with one being the lowest score and four being the highest. As graph 4 indicates, the attitudes of students toward math in the two Accelerated Math classes slightly improved over the semester, while the attitudes of the students in the control classrooms actually became less positive during that time.

As one semester of data from Oakwood Elementary School demonstrates, not only did the students in the Accelerated Math classrooms have significantly higher academic growth than the students in the control classrooms, the Accelerated Math students also had more positive attitudes toward math than their matched counterparts.

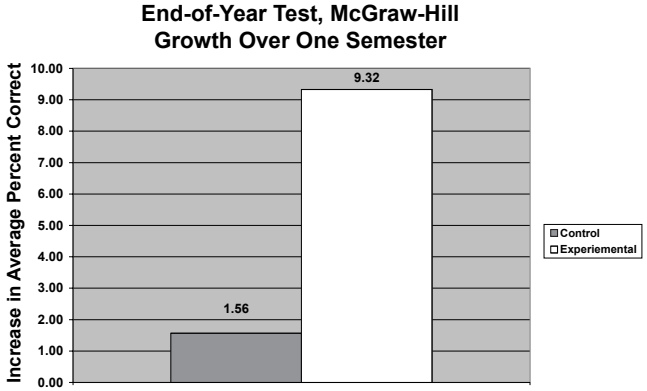
[2] The McGraw-Hill End-of-Year Test examines students' grasp of the curriculum presented in the McGraw-Hill textbook. The Accelerated Math students, who did not use this textbook, scored higher on the test than those students who did use the textbook for the entire school year.

Oakwood Elementary School, *Preston, Idaho*

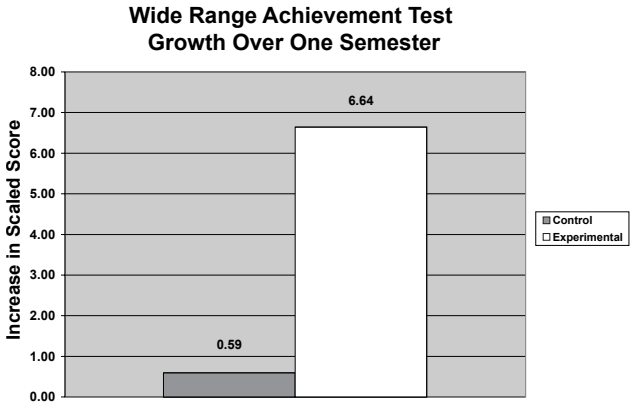
Graph 1



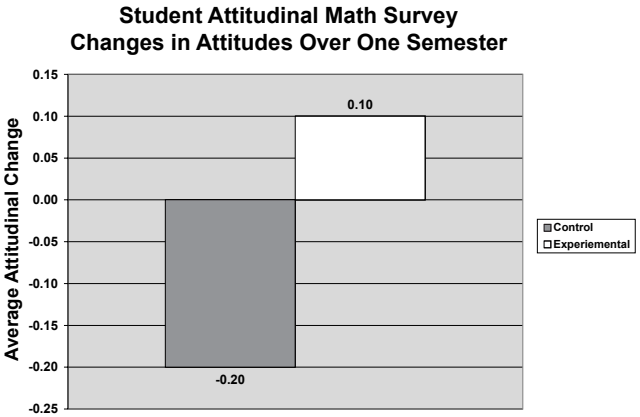
Graph 2



Graph 3



Graph 4



For more information, or for additional copies of this report, contact:

Renaissance Learning™

Helping educators improve schools through technology, professional development, and research

Renaissance Learning
Educational Research Department
PO Box 45016
Madison, WI 53744-5016
(800) 200-4848
www.renlearn.com