



FactsWise Research Findings

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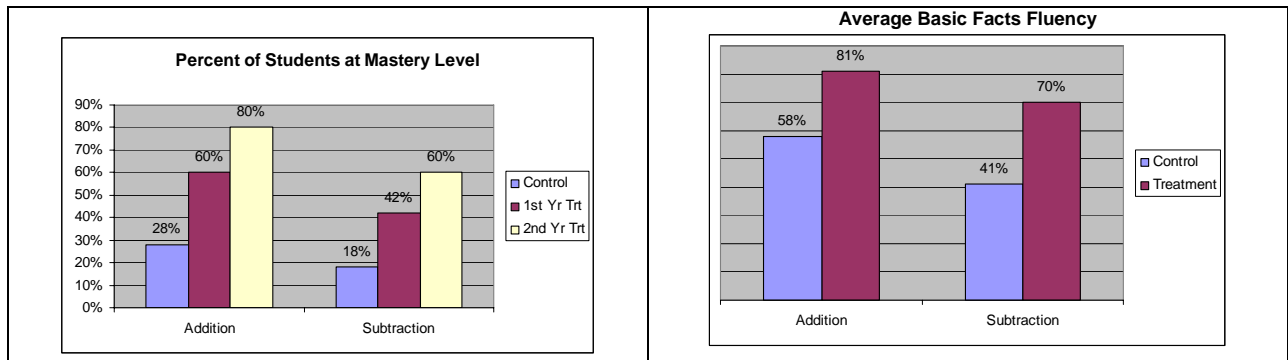
Hundreds of southern California primary students learned their basic facts differently this year, with remarkable results – a 40% increase in addition facts fluency and a 71% increase in subtraction facts fluency (compared with students in non-participating classrooms). In keeping with No Child Left Behind expectations, the percentage of students leaving first grade with less than 50% facts fluency dropped from 52% in control classrooms to 13% in classrooms using this instructional innovation.

Thanks to a Boeing grant, 125 primary teachers were trained this year on a research-based approach to developing basic facts fluency developed by Dr. Valerie Henry. FactsWise breaks the facts up into 9 small chunks, with an early focus on 5s and 10s. Consistent with the ways students from many other countries are taught their facts, students are then taught to use 5s and 10s to solve larger facts, including:

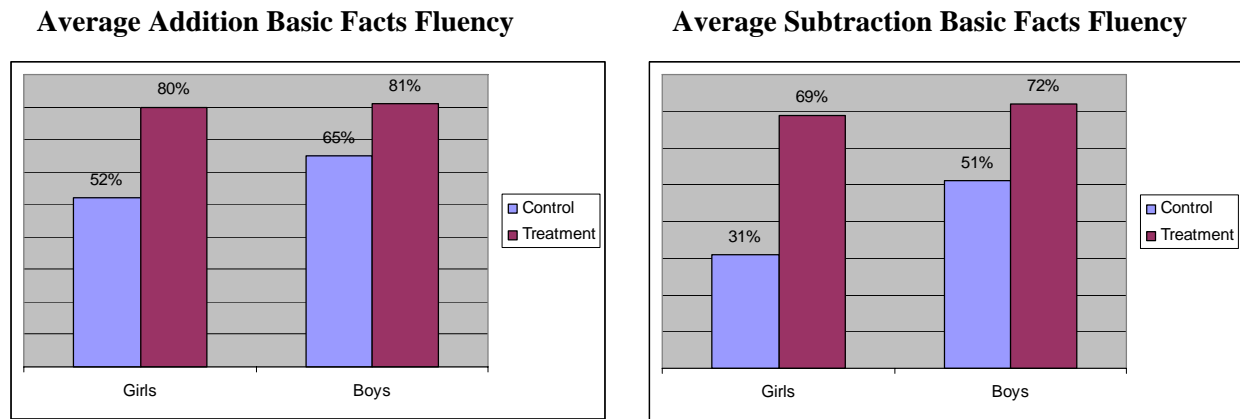
$$\begin{array}{c} 8 + 5 \\ \swarrow \quad \searrow \\ 8 + 2 + 3 \\ \swarrow \quad \searrow \\ 10 + 3 = 13 \end{array} \quad \text{or} \quad \begin{array}{c} 15 - 8 \\ \swarrow \quad \searrow \\ 5 + 10 - 8 \\ \swarrow \quad \searrow \\ 5 + 2 = 7 \end{array} \quad \text{or} \quad \begin{array}{ccc} 15 & \longrightarrow & 10 + 5 \\ - 8 & & - 8 \\ \hline & & 2 + 5 = 7 \end{array}$$

With this approach, students are encouraged to work on both memorization of facts and part-whole thinking strategies that are extremely important when solving more complex numeric and algebraic problems. Teachers were taught to use short one-on-one assessments to learn how their students were actually solving problems (i.e., counting, recalling from memory, or using part-whole strategies), and were provided with a variety of instructional strategies, games, and on-line activities specifically designed to focus on the 9 goals. Another difference between this approach and other approaches teachers tend to use is that once students master a small set of addition facts, they move immediately to the related subtraction facts.

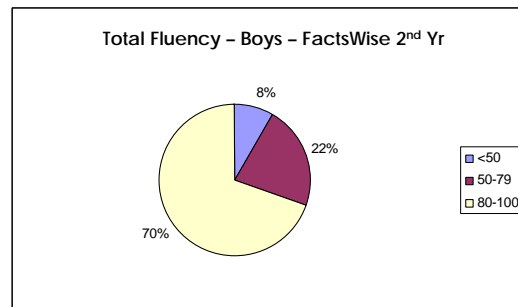
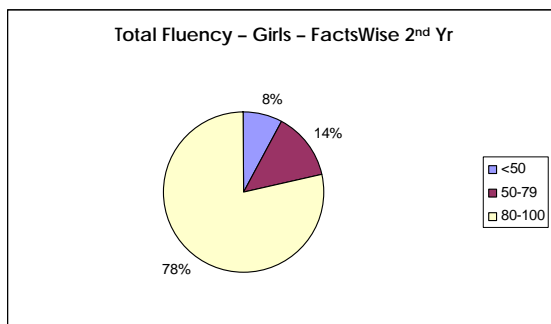
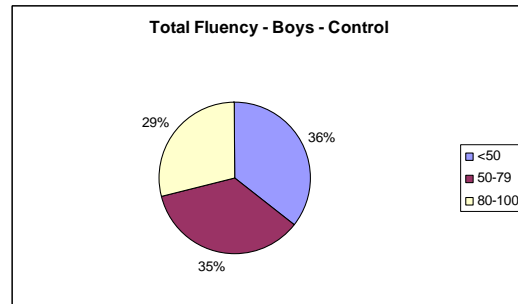
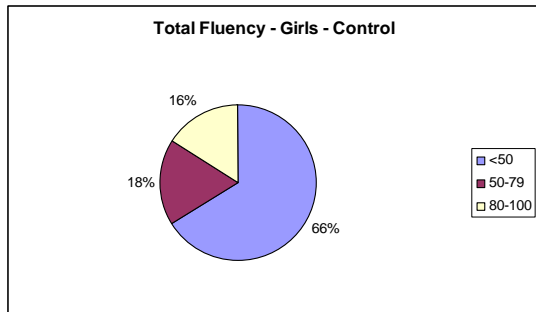
Students who studied in FactsWise classrooms showed much stronger memorization and part-whole thinking than students in classrooms using more traditional approaches. After three years of program development and implementation, first-grade students from 14 "treatment" and 10 "control" classrooms were given one-on-one assessments just a few weeks before the end of the school year. While only 28% of the control students demonstrated mastery of their addition facts (80% or more correctly solved without counting), 60% of the students working with 1st-year FactsWise teachers were at mastery. And 80% of the students who studied with 2nd- and 3rd-year FactsWise teachers were at mastery with their addition facts. Subtraction shows the same trend.



Girls in the control classrooms were significantly less fluent than boys in both addition and subtraction. This disparity was virtually eliminated in FactsWise classrooms.



- Results were even more pronounced in classrooms with teachers who were implementing FactsWise for the second-year. As the yellow portions of the graphs below show, only 16% of the girls and 29% of the boys in the control classrooms demonstrated mastery of basic facts (80% or more memorized or correctly solved using part-whole thinking in 3 seconds or less). In 2nd year FactsWise classrooms, 78% of the girls and 70% of the boys demonstrated mastery.



Yellow – 80-100% fluent; Red – 50-79% fluent; Blue – less than 50% fluent