

After-School Implementation of STEM in the ZONE: Milliones-UPrep Supplementary Report

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July 11, 2013

1. **Digital Think Through Math Program:** For the 32 students participating in this after-school ZONE program, math proficiencies¹ increased from 40 to 51 percent—a 30 percent increase over a three month period of time. For the school year 2011-2012, 37 percent of students at Milliones-UPrep were proficient in math, up 4.3 percent from the year before. If we use this incremental change to project math proficiency gains for 2012-2013 (actual math proficiency will not be available until fall), we estimate the year-end 2013 math proficiency would be $36 + 4.3$ or 40.3 percent which is not far removed from the 40 percent pre-intervention proficiency obtained for our ZONE after-school enrollees. One possible interpretation is that students in the ZONE increased, over a period of just three months, their math proficiency by more than 30 percent relative to students not in the ZONE. Of course this interpretation can only be confirmed when the actual math proficiency at Milliones-UPrep is released this fall. Equally important we need to evaluate actual PSSA performance of students within and outside the ZONE on 2013 math proficiencies.
 - 1.1. *Pittsburgh School District's Overall Goal of Math Proficiency for All Students, 2012-2013: 62.4 Percent.* Within a period of three months, students participating in Think Through Math were about 11 percentage points shy of this goal.
 - 1.2. *Pittsburgh School District's Goal of Math Proficiency for African American Students, 2012-2013: 50.5 Percent.* Over three months, participants in Think Through Math at the ZONE achieved this goal.
 - 1.3. *Pittsburgh School District's Goal of Math Proficiency for White Students, 2012-2013: 79.5 Percent.* Three months of participation in the ZONE's Think Through Math program moved these students to within 27.5 percentage points of closing the racial achievement gap in math. If our 2012-2013 projection of 40.3 percent proficient in math falls close to actual math proficiency reported for Milliones-UPrep, the estimated racial achievement gap here would be 39.2 percentage points. Thus we estimate that the closure rate within the ZONE might be 43 percent greater than the closure rate outside the ZONE.
 - 1.4. *National Recognition Award on June 3, 2013.* Quenton Turner, one of our Think Through Math enrollees in the ZONE, was one of six students recognized nationally for his extraordinary level of engagement in this digital math program. The founder of Think Through Math was present as well as other local and regional representatives of Think Through Math. Accompanied by his parents, relatives, and friends, he received a special certificate and a check of \$1,000 for investment in Pennsylvania's 529 Scholarship Plan.
2. **Values for Life Program:** Quenton Turner, our national awardee, was also a participant along with his peers in this program designed to increase student levels of love and respect, interpersonal skills, learning orientation, self-confidence, self-persistence, self-esteem, and self-reliance which in published studies are associated with enhanced academic engagement and accelerated learning. This program, brought to the ZONE late into the school year, was implemented in two temporally adjacent intervention cycles. Prior to each cycle, a 90-minute workshop was held for the three teachers of math, science, and literature who incorporated these programs into their classes. A consultant observed and provided feedback during each cycle, and assessments were collected from teachers prior to and just following each cycle of implementation (at post-test, teachers did not have access to their pre-test assessments). We noticed a marked increase in level of Think Through math participation and performance associated with these two cycles of intervention.
 - 2.1. *Learning Orientation: Savvy, creative, inventive; asks questions, wants to know how things work; remembers, identifies, compares, contrasts, generalizes; sees connections between different areas of learning; enjoys helping others learn.* Of the 41 students exposed to this program over a four-week period, Learning Orientation ratings increased in 80% of these students.
 - 1.1. *Self-Confidence: Explores, probes, investigates; attentive and enthusiastic when new challenges are introduced; eager to explore new places, meet new people, or examine new ideas, daring in constructive ways; excited and upbeat about living.* Of the 12 students exposed to an intensified version of this program squeezed into the last 10 days of school, Self-Confidence ratings increased in 75% of these students.

¹ Integral to Think Through Math are ongoing diagnostic assessments of math proficiency using test items that conform to both national (Common Core) and state (PSSA) standards.