
Contest Corner: Math Clubs in Kindergarten? It is happening in 24 New York City Schools!

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1 Introduction

Math clubs across Ohio will be hosting their annual spring competitions within the next few months. These math clubs represent only a small portion of the entire student population. How can we get more students involved in math clubs? Perhaps the answer lies in what research calls early math matters. Greg Duncan, an economist and education professor at the University of California (Irvine), is a national expert on the importance of strong early math skills. According to Duncan:

Math coming into school is important because kids who do well in math early on tend to do well in school. If you put knowing numbers and the order of numbers; literacy skills, knowing letters and word sounds; and behavior, being able to sit and pay attention, as well as being able to get along with others; if you put all these things side by side and just say, what's most predictive of how successful kids are, it turns out that math skills are more important than literacy skills and behaviors (Mongeau, 2013).

Dr. Doug Clements, a member of the writing team for NCTM's *Principles and Standards* and a professor at the University of Denver, is the creator of *Building Blocks*, a math curriculum being implemented in pre-kindergarten classrooms throughout New York City Public schools. Clements states that, "Most teachers, of course, have been through United States mathematics education. They tend to think of math as just skills. They tend to think of it as a quiet activity where you pull out paper, and write your facts down. *Building Blocks* math is designed to be exciting, fun and loud" (Kamenetz, 2014). Dr. Clements reported that the average preschool child spent fifty-eight seconds a day on mathematics. "With *Building Blocks*, kids encounter math games, computer programs, toys and activities. Kids run around the classroom and bump into mathematics at every turn" (Kamenetz, 2014).

The Robin Hood Early Childhood Initiative recently funded a preschool math intervention program called Making Pre-K Counts along with High 5's, a kindergarten extracurricular math club in twenty-four New York City Public Schools. Both of these programs are run by trained facilitators from the Bank Street College of Education. The Robin Hood Early Childhood Initiative represents a collaboration between Manpower Demonstration Research Corporation, MDRC, and the Robin Hood Foundation. The High 5's clubs are also supported by The Heising-Simons Foundation and the Overdeck Family Foundation. The goal of the Robin Hood Early Childhood Initiative is to improve the life trajectories of the New York City children living in poverty. According to Pamela Morris, MDRC's study's lead investigator, the funding for both Making Pre-K Count (MPC), and High 5's were based on the "evidence that strong early math skills are predictive of later achievement and have the potential to increase both high school graduation and college attendance rates." MPC and High 5's are rooted in studies showing that preschoolers with strong early math skills do better in both math and reading in later elementary school. Children who maintain these math skills are more likely to graduate from high school and attend college. Thousands of children involved in the MPC study received a high-quality math education in pre-K. High 5's aims to increase the likelihood that children will be able to maintain their early math gains into later elementary school and beyond (Kamenetz, 2014).

According to MDRC's research team, "Children who participate in both Making Pre-K Count and High 5's will receive the *Building Blocks* preschool curriculum, which includes intensive training and coaching for classroom teachers through the Making Pre-K Count project, followed by High 5's kindergarten math clubs. In High 5's clubs, Bank Street's facilitators provide small groups of children with targeted and engaging instruction three times a week, outside of core instructional time." The instruction includes fun, engaging math games that pick up where Building Blocks left off. The groups meet outside of regular instruction time for approximately 28 weeks. Many facilitators are credentialed at the paraprofessional level, making the intervention more feasible.

During the 2014-2015 school year, the High 5's research team implemented a pilot phase at three public schools that received Building Blocks as part of the Making Pre-K Count (MPC) intervention. These pilot sites were selected to ensure "representation of the variability in MPC sites, taking into account a number of factors, including the borough of residence, ethnicity/race, schedules, and capacity to implement the High 5's model." Bank Street College Facilitators hired, trained, and supervised the facilitators in this High 5's programs. The pilot study was designed to determine if the High 5's intervention program could feasibly be implemented on a full-scale in all New York City Elementary Schools. The research team focused on student attendance and engagement, curricular implementation, instructional quality, and reception by teachers, school administrators, and families.

Results of High 5's pilot year were that children's attendance was high and that children made sufficient progress in their math skills, further confirming that the High 5's intervention program could be implemented with fidelity and quality in schools implementing the Making Pre-K Counts program.

The full implementation phase of High 5's was offered to children at 24 public school sites for the 2015-2016 school year. Each of the 24 chosen schools had been randomly

assigned to receive the MPC, *Building Blocks* intervention during the 2014-2015 school year. Secondly, children in the public school *Building Blocks* group who returned to those schools for kindergarten were randomly placed in a group to receive the High 5's intervention plan or to a comparison group that receives regular kindergarten programming without High 5's. Three research groups resulted:

1. A group that receives no math enhancement in either preschool or kindergarten,
2. A group of children who receive only the preschool math intervention, and
3. A group of children who receive both the preschool and kindergarten interventions.

The design will allow the research team to assess both the impact of the Making Pre-K Count Preschool intervention by itself and the impact of the preschool intervention as enhanced by the High 5's kindergarten add-on.

MDRC's research team will follow children's progress through at least the third grade, to study the effects of the Making Pre-K Count preschool intervention by itself, as well as the impact of the preschool intervention as enhanced by High 5's math clubs to see if either program, alone or in combination, offers significant prospects for longer-term impact.

It is important for Ohio and other states to follow the progress and results of these programs and other such programs aimed to enhance children's mathematical development in early grades. Teacher training in researched-based early childhood mathematics curriculum, and training of paraprofessionals and other educational facilitators, should be considered if we hope for all children to succeed in mathematics. Ohio early childhood teachers should be encouraged to pursue more training in mathematics education and/or in obtaining Ohio's elementary math specialist endorsement. Teaming with foundations that not only support the development of career and college ready graduates, but also realize that such goals have strong foundations in pre-K, and early childhood education, will allow such educators the funding to pursue additional training to improve their teaching and hopefully start math clubs in every school from Pre-K level to college and beyond.

References

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