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What is Move It Math and is it Producing Improvements in the Tests Scores of Dogwood Elementary

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SENIOR HONORS PROJECT MENTOR PROGRESS REPORT

Mentor's Name: Dr. P. Mark Taylor

I have met with Monica B. Harper and reviewed the progress being made on his/her Senior Honors Project.

Progress is satisfactory

Progress is unsatisfactory

If progress is unsatisfactory, please note here the plans which have been made to move the project forward.

Mentor's Signature _____ Date _____

Student should return this form to her/his Senior Seminar Instructor by the week of March 13, 2006.

**What is *MOVE IT Math*
and is it Producing
Improvements in the Test
Scores of Dogwood
Elementary**

By:

Monica Balon Harper

April 29, 2005

For:

Senior Honors Project

Dr. P. Mark Taylor, Advisor

Abstract

In the last decade, increased testing has brought on a plethora of programs that claim to be able to drastically affect scores. Because the consequences of not performing well on standardized tests can be as severe as having the federal government take control of the school, schools scramble to make the best program selection. Educators must take some responsibility in this progress by being proactive in choosing what and how their students are taught. Researching programs before putting them into practice is not just a good idea: it is key to ensuring the academic success of students. *MOVE IT Math* is a kindergarten through eighth grade program that is relatively new to Knox County. It is implemented with other Project GRAD components. Math TCAP test scores for elementary schools using the initiative have been on a continual rise since its implementation. At least on the elementary school level, *MOVE IT Math* is making a positive difference in test results.

Introduction

Education is at the core of American society. The issue of education affects just about every domain, from politics to religion. At best, opinions about education can be viewed as controversial and subjective. Future educators cannot strictly depend on the beliefs of others or historical analysis. Actual and statistical research about the subject, ideologies and programs within the subject, and future progress concerning the subject must be seriously considered. The *MOVE IT math* program is becoming more and more prevalent in the kindergarten through eighth grade mathematics curriculum. Before putting it into practice in one's classroom, the following must be considered: 1) why is the program needed; 2) what other plans are affiliated with the program; 3) what exactly is the program; and, 3) has the program been successful.

The Need for *MOVE IT Math*

Mathematics is one of the primary focal areas in education. There are few careers that do not have a mathematical component. Furthermore, and perhaps more importantly, math is a process that many people use in their everyday lives in activities ranging from balancing a checkbook to keeping up with the statistics of an athlete. It is partly because of this significance that such a huge emphasis has been placed on math competency and testing.

In the state of Tennessee, the Gateway and the TCAP are the major forms of standardized testing. The Tennessee Comprehension Assessment Program (TCAP) is given every year to students in grades third through eighth. It is a norm-referenced achievement test that uses a statistical program, the Tennessee Value-Added Assessment

System (TVAAS), to interpret the results (2). The Gateway assessments were recently implemented in addition to the TCAP. These are subject-based exams that in some schools determine whether students receive course credit (3). Beginning with this year's class, it is mandatory that all students pass the Gateway exams in Algebra I, Biology, and English II in order to be issued a high school diploma.

The main goal of the Gateways is to raise the standards for high school graduation. This is a result of the *No Child Left Behind Act* (NCLB). Both the testing and the NCLB initiatives are efforts to ensure that students are prepared to go into the work force, post-secondary education, the military, or some type of productive endeavor (4). To show further commitment to education, Tennessee is one of 41 states that participate in national exams offered by the National Assessment of Educational Progress (NAEP), the United State's testing program or report card (2).

The testing outbreak has led to a variety of programs that all claim to have just the right formula for achievement on the tests. Most offer quick, but temporary results. Others focus strictly on "teaching to teach," omitting creative, critical, and advanced thinking. Few actually provide the total package: adequate test preparation along with vital supplemental skills for academic success. Project GRAD, the program of choice for 14 of the Knox County's schools, offers a unique combination of program opportunities that appear to be well rounded.

What is Project GRAD?

Project Graduation Really Achieves Dreams began in Houston, Texas in the late 1980s and was founded by James Ketelsen, then Tenneco Corporation's Chairman and

CEO. He wanted to improve the high school graduation and drop out rates; but, Ketelsen realized through failed ventures that starting in high school is too late to try to ensure that he reach his goal of 40% of the entering freshman class being enrolled in college. Thus, there was a need to put feeder systems were put into place (1).

Within the feeder system, there are elementary, middle, and high schools. Each of the three levels follows the components of Project GRAD. In turn, the students grow and learn under the same basic principles from kindergarten to grade twelve. The students are able to experience a consistent path to educational success.

Project GRAD's path to educational success has five key components: Mathematics, literacy, classroom management, social services/parental involvement, and the high school program. Each of the components is accompanied by strategic plans. The literacy component has the Success for All (SFA) reading program in place. SFA allows children to go through various reading stages. Progression through the levels are student paced based on the results of assessments that are done every eight weeks. The next component, classroom management, follows the Consistency Management and Cooperative Discipline, or CMCD. CMCD is a research-based instructional and discipline management arrangement that combines consistency in classroom organization with student self-discipline. Therefore, overall success in the classroom is a result of teacher and pupil cooperation. The social services/parental involvement component includes having full time social workers and project managers in schools to work with teachers, counselors and parents to make sure that all private and public community resources are utilized. Scholarships and summer institutes are a part of the high school program component. Local chapters come up with different ways to enrich the academic

culture of the high school. Lastly, the mathematics component depends on *MOVE IT Math*, the specifics of which will be focused on later in the paper.

Because of the immense success of Project GRAD in Houston, the program has expanded into 12 cities with over 135,000 students being served in 217 schools. On the local level, Knoxville has fourteen Project GRAD schools and approximately 7,500 students.

What is *MOVE IT Math*?

MOVE IT Math (MIM) is a mathematical instructional program developed at the University of Houston. *MOVE IT Math* is an acronym for **M**ath **O**pportunities, **V**aluable **E**xperiences, and **I**nnovative **T**eaching. Instead of focusing on lots of redundant worksheets, a more interactive approach is attempted.

MOVE IT Math is at the core of the Project GRAD Mathematics component. It is a mathematics system for teaching and learning that promotes equilibrium between students' understanding of mathematical concepts and students' computational fluency in grades kindergarten through eight. An emphasis is placed on student discovery, reasoning, and communication, so that mathematical concepts are understood and articulated by students. Mathematical researchers like Dr. John Van de Walle, author of *Elementary and Middle School Mathematics: Teaching Developmentally*, profess that this student-centered method leads to student enjoyment of math and ultimately better comprehension (5). There is less teacher lecturing and more hands-on activities. Students develop a fluency in the facts and procedures of mathematics without performing boring, mundane activities. Most importantly, students are prepared to proceed to the next grade

level with the confidence, ability, and enthusiasm necessary to move through the curriculum with a foundation based upon understanding rather than memorization.

MOVE IT Math moves children through the curriculum by providing the right teaching opportunities for teachers. Teachers are then empowered to create an environment where children experience mathematics in a way that is valuable for their individual learning. Children enrolled in a school implementing *MOVE IT Math* conclude each grade level ready to move on to the next year's content.

This innovative program is organized around the National Council of Teachers of Mathematics (NCTM) Principals and Standards, which are guidelines for excellence in mathematics education and a beckoning for all children to engage in more challenging mathematics in the classroom (6). NCTM is the nation's largest mathematical organization with over 100,000 members. With the use of carefully selected manipulatives, teachers are able to foster the understanding of concepts and processes in mathematics more efficiently. *MOVE IT Math* emphasizes daily problem solving and addresses the learning styles of all children.

MOVE IT Math instruction incorporates a well designed algebra strand at every grade level, including kindergarten, to insure the students' preparation for higher level mathematics courses during high school. Another crucial aspect of *MOVE IT Math* is the alignment of the instructional program with state and local standards, teacher resources, professional development of teachers and instructional support personnel, and instructional support. And because no two schools are exactly alike, *MOVE IT Math* programs may vary slightly in each school site so that each is getting what is best.

The *MOVE IT Math* program provides extensive professional development beginning with an introductory 30 hour instructional block focused strictly on mathematical content. Continual, comprehensive staff development takes place throughout the school year as teachers come together to plan as grade level or subject teams. This allows a time for instructors to reflect on students' work, targeted student performance data, and an array of teaching practices. Each school site and each classroom within the school is supplied with resources to support and enhance the teaching of mathematics. Some of the materials used across the program include the use of mathematical characters such as Collider Divider, Motley Crab Adder, Sir Crab Multiplier, and Tractor Subtractor. Demonstrations can be found in Appendix D.

MOVE IT Math has been recognized by the Southwest Educational Development Laboratory as one of the five "Best Practices" in mathematics in its five state region. *MOVE IT Math* was the only initiative in this group that served elementary schools. Since 1995, all schools implementing *MOVE IT Math* have shown significant improvements in some or all of the following areas: student performance in mathematics, student and teacher interest in mathematics, increased enrollment in upper level courses in high school mathematics classes, and/or improved student discipline and attendance (1).

Does *MOVE IT Math* work?

To determine the effectiveness of *MOVE IT Math* in the Project GRAD Knoxville schools, a survey was given to teachers in one of the Project GRAD schools, an elementary school, that has been using the *MOVE IT Math* program for two years. Test scores of the school were also taken into consideration. With the exception of Maynard

Elementary, Knox County Project GRAD schools are all in their second year of implementation of *MOVE IT Math*. Maynard was the only school that has had full implementation for three years. Dr. Charles Lindsey, superintendent of the Knox County Public School system had this to say about Maynard's progress: "From our results [The Tennessee Comprehensive Assessment Program results, which are based on the *No Child Left Behind* benchmarks], it appears that our inner city initiative, Project GRAD, is having the desired effect. Maynard Elementary...has made exceptional improvement and other schools where the program is being [partially] implemented have already started to show solid improvement as well" (1).

Results

Teachers are ecstatic about *MOVE IT Math*. In response to the survey (Appendix A), one teacher explains that her favorite aspect of *MOVE IT Math* is that it "helps the students realize that math is a part of everyday life. Since they see that they will need it, they are eager to learn it. The math characters make the children laugh and relate even more to math." 100% of the teachers surveyed felt that the math manipulatives and games were okay to exceptional. Over 90% of the teachers responded that their students were more prepared for standardized tests and had better attitudes towards math since the implementation of *MOVE IT Math*.

The program, at least according to the survey respondents, has few flaws. "The only problem that I see with *MOVE IT Math* is the lack of parent training," responds a kindergarten teacher. "There are extensive workshops for teachers and staff, but the parents are knowledgeable in the great changes that are taken place in our school's

mathematics program.” There were no other problems given, however, approximately 70% of the teachers felt that the program should be kindergarten through fifth grade only. “MOVE IT Math has so many fun, but ‘kid-appropriate’ aspects. No middle school student is going to think Collider Divider is cool. There are going to have to be some drastic changes to make the program be as productive on the middle school as it has been on the elementary level.”

According to the *No Child Left Behind* state report in Appendix C, Dogwood Elementary is making significant progress. The *MOVE IT Math* program was implemented during the 2003-2004 school year. At the end of that same year, Dogwood made annual yearly progress in the overall, black, and low SES categories. In the previous year, the school had not made progress in any of those areas. Furthermore, according to Dogwood’s state report card, in the 2003, 31% of all of the school’s were below proficiency. By 2004, the percentage dropped four percentage points to 27%, more closely aligned with the state average of 17%. When broken down into gain by year, grade, and content, fourth grade gained more than 10% points from the 2002-2003 school year to the 2003-2004 academic term. The fifth graders had great growth during that period too: a little over six percent. The standard of measurement for both the *NCLB* and state report card was the TCAP.

Discussion

The results from the survey, *NCLB* report and Tennessee report card for Dogwood elementary support the claim that the *MOVE IT Math* program leads to improvements in test score. The surveys report that not only have increased test scores been by-products

of the initiative, but improved student attitudes towards mathematics have come from the implementation of the program as well. Students are having more fun and realizing the relevancy of the subject. These positive revelations are likely to have a domino effect into the middle and high school careers of the children. Should the program be effectively designed to extend to higher grade levels, I predict that massive improvements in the test scores on the TCAP, Gateway, and individual subject areas will be results.

Conclusion

The ideas behind the *MOVE IT Math* program will have a place in my classroom. I am impressed with the program's goals and outcomes. The program, with its teacher workshops and training sessions, will be easy to implement. Since the only problem with the program seems to be a lack of parental training, I will attempt to pass on the information through workshops designed specifically for them by the teachers and faculty from my school. This will allow the staff to ensure comprehension of the material while involving parents in the education of their children. The workshops will be after school and on the weekends.

Works Referenced

- 1) Project GRAD USA website. <http://www.projectgradusa.org>. Retrieved February 12, 2005.
- 2) Tennessee Comptroller Report. <http://www.comptroller.state.tn.us/orea/reports/testing.pdf#search='tcap%20gateway%20tennessee'>. Retrieved February 10, 2005.
- 3) Frayser High School Policy Manual. 2004-2005 academic school year. Dr. Charles Green, Principal.
- 4) No Child Left Behind website. <http://www.ed.gov/nclb/overview/intro/execsumm.html>. February 2, 2005.
- 5) Van de Walle, J. A. (2003). *Elementary and middle school mathematics: Teaching developmentally*. New York: Pearson Education.
- 6) National Council of Teachers of Mathematics website. <http://www.nctm.org>. January 20, 2005.
- 7) Surveys

Appendix A

Move It Math has now officially been in place at your school for two school terms. Please answer the following questions candidly. No identities will be revealed.

Grade Level _____ **Years Teaching** _____

1. Do you think that the *MOVE IT Math* manipulatives and games were helpful in your instruction?
1-Definitely Not 2-No 3-Okay 4- Great 5-Exceptional

2. Do you feel that your students were more prepared (in comparison with the previous math program) for the TCAP because of the *MOVE IT Math* curriculum? Explain.
1-Definitely Not 2-No 3-Somewhat 4- Yes 5-Definitely

3. Do you feel that the student's attitude towards math improved due to *MOVE IT Math*?
1-Definitely Not 2-No 3-Somewhat 4- Yes 5-Definitely

4. Do you feel that the students will be more prepared (in comparison with the previous math program) for the mathematical objectives of the next grade level because of *MOVE IT Math*?
1-Definitely Not 2-No 3-Somewhat 4- Yes 5-Definitely

5. What is your favorite aspect of *MOVE IT Math*?

6. What is your LEAST favorite aspect of *MOVE IT Math*?

7. Please discuss any further suggestions, complaints, or concerns about the *MOVE IT Math* program.

Appendix B

No Child Left Behind Annual Yearly Progress Report

School	Mathematics			
	% Tested	Overall	Black	Low SES
Austin-East Magnet High	Y	Y	Y	Y
Dogwood	Y	Y	Y	Y
Fulton High	Y	Y	Y	Y
Green Magnet	Y			
Inskip	Y			
KAEC (K-8)				
KAEC (HS)				
	Y			
	Y	Y		
Northwest Middle	Y	Y	Y	
Sarah M. Greene Magnet	Y			
South-Doyle Middle	Y	Y	Y	Y
Vine Middle Magnet	Y			
Knox County (K-8)	Y	Y		
Knox County (HS)	Y	Y	Y	Y

Y	Made AYP
Y	Made AYP, did not in 2003
	Safe Harbor
	Did not make AYP

*Courtesy of <http://www.ed.gov/nclb/overview/intro/execsumm.html>

Appendix C

Grades K-8: Subgroup Disaggregation

Math

CRT	2003			2004			State		
	% Below Proficient	% Proficient	% Advanced	% Below Proficient	% Proficient & Advanced	% Proficient & Advanced 2 Yr Avg	% Below Proficient	% Proficient & Advanced	% Proficient & Advanced 2 Yr Avg
All Students	31.0	51.4	17.8	27.0	73.0	71.0	17.0	83.0	81.0
White	30.0	49.0	21.3	24.0	76.0	73.0	11.0	89.0	88.0
Hispanic	n/a	n/a	n/a	n/a	n/a	n/a	23.0	77.0	74.0
African American	33.0	59.6	7.0	34.0	66.0	67.0	31.0	69.0	66.0
Native American	n/a	n/a	n/a	n/a	n/a	n/a	15.0	85.0	82.0
Asian/Pacific Islander	n/a	n/a	n/a	n/a	n/a	n/a	7.0	93.0	92.0
Economically Disadvantaged	38.0	51.7	10.3	31.0	69.0	66.0	25.0	75.0	72.0
Students with Disabilities	78.0	14.6	7.3	66.0	34.0	28.0	55.0	45.0	42.0
Limited English Proficient	n/a	n/a	n/a	n/a	n/a	n/a	34.0	66.0	64.0

Elementary: Grades K-8

Growth Standard

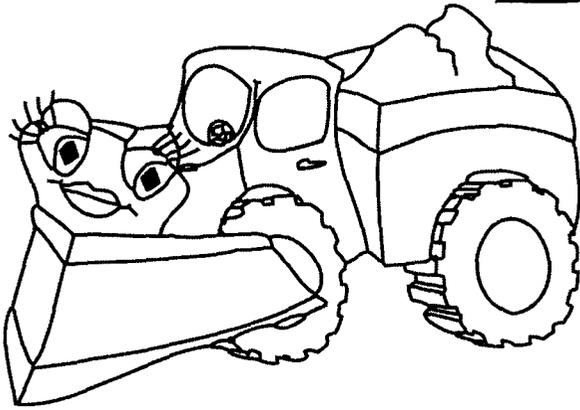
What's this?

CRT	2004	
	Status	Mean Gain
Reading/Language	C	0.0
Math	A	6.3
Science	B	-0.1
Social Studies	A	1.8

Gain by year, grade, content

	Reading/Language Arts						Math					
	01-02	02-03	03-04	3-yr Avg	State Growth Standard	State 3yr Avg	01-02	02-03	03-04	3-yr Avg	State Growth Standard	State 3yr Avg
4th	-2.0	-0.6	-1.0	-1.2	0.0	-0.7	3.4	3.2	13.6	6.7	0.0	-0.3
5th	1.5	1.1	1.1	1.2	0.0	-0.6	5.5	2.8	9.3	5.8	0.0	0.9
6th	n/a	n/a	n/a	n/a	0.0	1.4	n/a	n/a	n/a	n/a	0.0	-0.7
7th	n/a	n/a	n/a	n/a	0.0	-0.2	n/a	n/a	n/a	n/a	0.0	1.6
8th	n/a	n/a	n/a	n/a	0.0	-0.5	n/a	n/a	n/a	n/a	0.0	-0.7

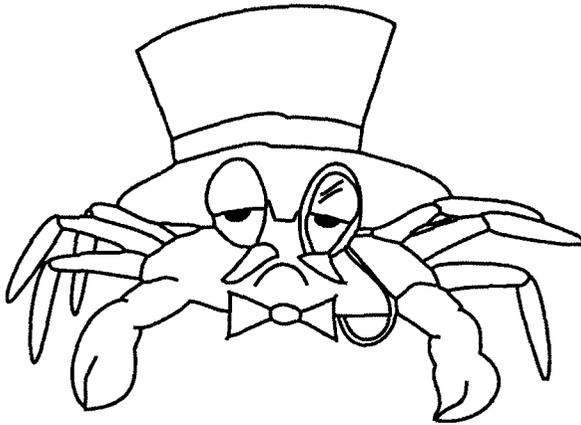
Appendix D



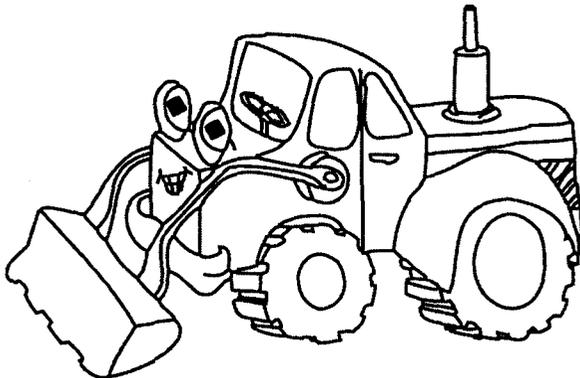
Collider Divider



Motley Crab Adder



Sir Crab Multiplier



Tractor Subtractor