Wilde Lake Middle School's
Spring, 2003 Pilot Study

Academic Enrichment Classes

**The Habits of Mind Exchange
The H.O.M.E. After School
AcceleratedLearning Program**

Direct Instruction

Socio-Emotional Learning

Accelerated Learning

Computer Assisted Instruction

COMPUTER ASSISTED INSTRUCTION

1.) 10 Minute Numeracy Assignments by Objective

2.) QuizStar Vocabulary Development

3.) Test Factory – Self-assessment by Domain & Objective

SOCIO-EMOTIONAL LEARNING

4.) Shared Summits

5.) Aqua Havens for Education

6.) Triple T Production Company

DIRECT INSTRUCTION

7.) The Power of 1

8.) All Fractions are Division Problems

9.) Math is an integrated proven system that can be controlled by the learner.

2003 Pilot Study

The Accelerated Learning Program
At
Wilde Lake Middle School

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Final Report by Bob Keddell

May, 2003

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HOWARD COUNTY PUBLIC SCHOOL SYSTEM GOALS

"Each child, regardless of race, ethnicity, socio-economic status or gender, will meet the rigorous performance standards that have been established."

"All diploma bound students will perform on or above grade level in all measured content areas."

LITERATURE SUMMARY

The development of Wilde Lake Middle School's Accelerated Learning Program began with a literature review of education research in four areas. (1.) Change   (2.) Technology Learning   (3.) Acceleration And   (4.) After School Programming

CHANGE

Change processes and diagrams were reviewed. From the literature, five (5) factors were identified to support the effort to manage complex change. The five factors were from T. Knoster's (1991) Presentation at the TASH Conference in Washington D.C. The five factors we have kept in mind during the development of the program include: (1.) VISION (2.) SKILLS (3.) INCENTIVES (4.) RESOURCES (5.) ACTION PLAN. The literature clearly referred to the importance of meeting such factors if change were to occur for some of our neediest students and the real possibility of these students meeting the Howard County Public School System's goal of closing the achievement gaps by the 2005 and 2007 identified deadlines.

TECHNOLOGY LEARNING

Preparation for implementing academic enrichment classes with a technology backbone began by reviewing the research on Education Technology's Impact on student achievement. Using a summary provided by the Milken Exchange on education technology, over 700 studies could be reviewed efficiently. The overwhelming evidence pointed to the fact that computer assisted instruction improved student achievement in all subject areas on both standardized tests as well as in higher-order thinking skills. Another critical finding found that student attitudes toward learning and their own self-concept improved significantly when computers were used for instruction. The education research left no doubt that technology could play a critical role in developing an accelerated learning program at Wilde Lake Middle School.

AFTER SCHOOL PROGRAMMING

The literature review for after school programming was conclusive in the fact that a well-organized program that addressed the "whole student" could provide significant student gains in achievement and involvement in the school.

> *"Studies show that after-school program participation is associated with higher grades and test scores, especially for low-income students."* (Hamilton and Klein 1998).

> *" ..and has been linked with improved attitudes toward school, higher expectations for school achievement, better work habits, and higher attendance."* (Brooks, Mojica, and Land (1995); Posner and Vandell (1994); Poulin 1998; and Witt, 1997)

> *"Meaningful educational reform is a multi-dimensional endeavor whereby all components of schooling are transformed to meet the "whole person needs" of students for a culturally diverse national and global citizenry."* (LaPoint, Butty, Thomas, and Thompson 2001)

ACCELERATION

The literature review attempting to relate the term acceleration to "at risk" or low achieving students produced minimum results. What was found were articles relating acceleration to gifted and talented students. (skipping grades and credit for courses through tests) The search did point to a distinction that is drawn between "acceleration" and "accelerated learning" or "accelerated training" in business models.

The literature pointed out that traditional targets for "at risk" students include the passing of a specific test, completing homework or supplemental instruction. Most programming for "at risk" students' targets "remediation" and the programming focus were almost exclusively focused on a student's deficiencies.
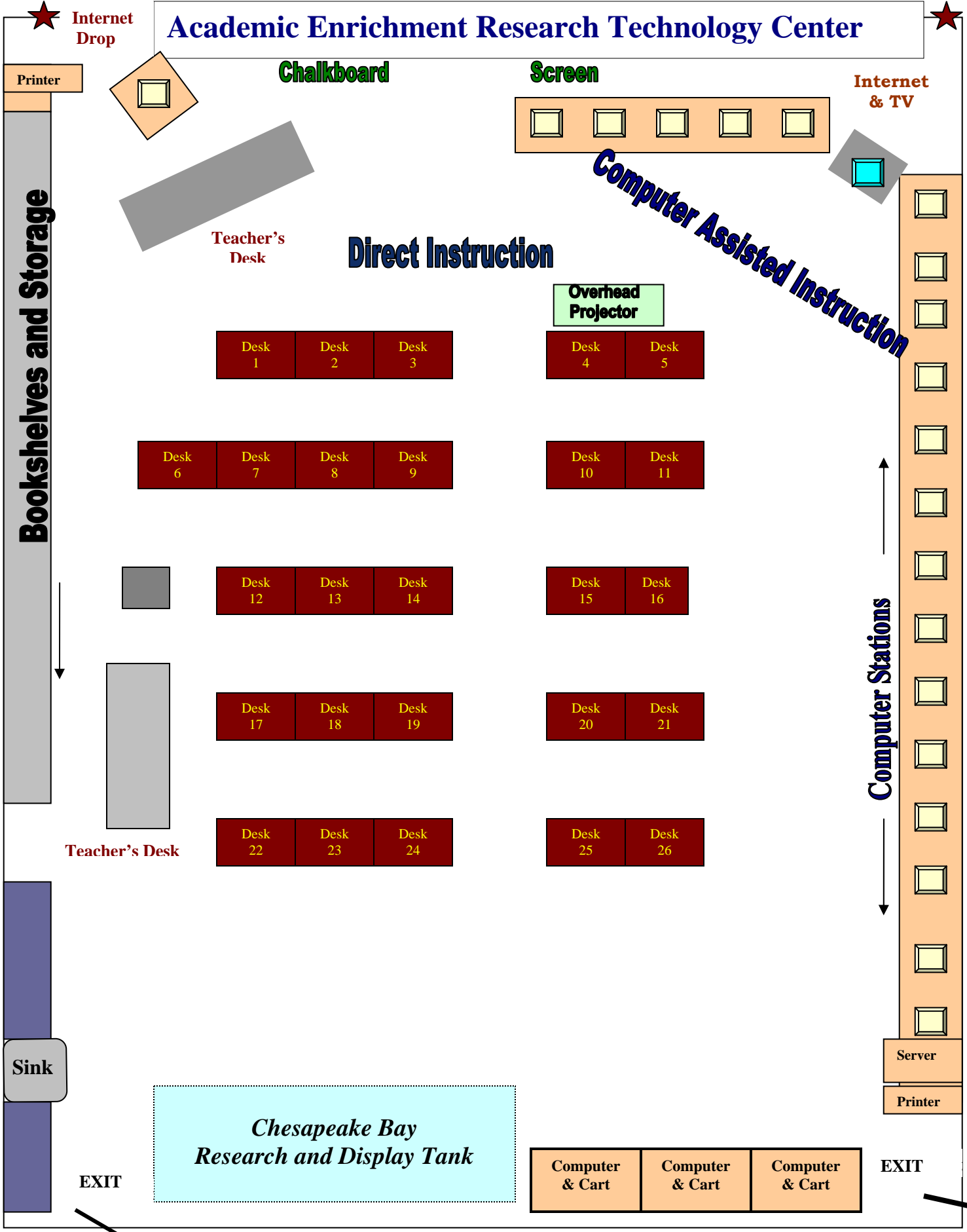
The chief focus for the development of Wilde Lake's accelerated learning programming came from an article that discussed the concept of the accelerated-learning method of instruction. The article speaks to the history of accelerated learning "beginning in the early 1960s when Bulgarian psychiatrist, George Lozanov wrote about techniques to interweave various techniques together to get peoples' left-brain and right-brain abilities to work together to help people learn faster and better. From this literature came the following definition to help Wilde Lake Middle School advance its goal of meeting the Howard County Public School System goals.

> *"Accelerated learning is a multi-sensory, brain-compatible teaching and learning methodology. It uses information from brain research to ensure that less time is wasted than in more traditional learning processes. Accelerated learning involves both the packaging of the content and the conditioning of the learners so that students can absorb and retain material faster through traditional barriers to learning. Accelerated learning is a multi-dimensional approach in which the learner is the focal point of the experience. The learners are in control of the learning. In accelerated learning, the setting should be comfortable and colorful. The activities designed to appeal to as many learning styles as possible to ensure each learner will benefit."*

In summary, the literature review detailed the necessary components for a program that could make a difference for all students, but especially for students traditionally struggling to achieve at or above grade level. The challenge was clear. …….Technology – Yes………Multi-dimensional – Yes…..After School Programming – Yes………Do not let a child's deficiencies be their identity – Yes.

Finally, the literature's call for a comprehensive program of studies also requires an evaluation plan to determine the effectiveness and future of supportive programming. The following pilot study has begun the task of evaluating programming effectiveness for long-term decision-making.

Academic Enrichment Research Technology Center

Internet Drop

Printer

Chalkboard

Screen

Internet & TV

Computer Assisted Instruction

Bookshelves and Storage

Teacher's Desk

Direct Instruction

Overhead Projector

| Desk 1 | Desk 2 | Desk 3 |

| Desk 4 | Desk 5 |

| Desk 6 | Desk 7 | Desk 8 | Desk 9 |

| Desk 10 | Desk 11 |

| Desk 12 | Desk 13 | Desk 14 |

| Desk 15 | Desk 16 |

| Desk 17 | Desk 18 | Desk 19 |

| Desk 20 | Desk 21 |

Teacher's Desk

| Desk 22 | Desk 23 | Desk 24 |

| Desk 25 | Desk 26 |

Computer Stations

Server

Printer

Sink

Chesapeake Bay Research and Display Tank

| Computer & Cart | Computer & Cart | Computer & Cart |

EXIT

EXIT

PILOT STUDY INTRODUCTION

Wilde Lake Middle School, in cooperation with Tool Factory Inc., E4 Answers Inc., The Lazarus Foundation, Artificial Reefs Inc., the National Aquarium in Baltimore, Howard County Department of Recreation and Parks and Dr. Robert Kadel of Johns Hopkins University, have teamed to conduct a long-term study related to *computer-assisted instruction* using two Tool Factory math software packages, a specific *direct instruction* methodology and a *socio-emotional learning* component related to mathematics achievement. The *computer assisted instruction* software component allows for prescriptive differentiation by Domains and Objectives as required by the Maryland Functional Math test and prescriptive assessment by Domains and Objectives matching the requirements of the Maryland Functional Math Test. Specifically, the school is using Tool Factory Inc.'s 10 Minute Numeracy Test software for differentiation and the company's new site, Test Factory, located at http://www.testfactory.net to work with a set of students who have failed the functional exam two or more times despite documented interventions to facilitate student learning by the school.

The *direct instruction* methodology follows three specific knowledge-building strategies. (1.) The Power of One – Teaching students to know how to convert the number 1 or any other number to fractions, decimals, percents, etc. (2.) That all fractions are really division problems (3.) That math is an integrated proven system that can be controlled by the learner. The trial period for implementing of this study was just completed with the administration in April of the State of Maryland's Math Functional Exam. The short 6-8 week trial period focused on the following.

- ✓ 10 Minute Numeracy Test software with ten question sets specific to the Maryland Functional Math Test's 30 objectives.
- ✓ Test Factory software for students and teachers to acquire immediate feedback and self-analysis in the functional test's domains and objectives.
- ✓ One month of "treatment" challenging students to assess their learning using Test Factory Inc. and then to assign to themselves the specific objectives that they needed to work on using Numeracy problems.
- ✓ Computer Assisted Instruction combining directed instruction using textbooks and teacher-designed lessons.
- ✓ The addition of socio-emotional learning components for students working after school. Attendance in the Every Child Achieving After School Program for grade 7 was 96.4%.

Socio-emotional learning has been built into the Wilde Lake Middle School after school programming. Three programs work to increase student involvement in the school and improve student relationships to their teachers. They are Shared Summits (mountaineering theme), Aqua Havens for Education (aquatic science) and the Triple T Production Company (technology education).

WILDE LAKE MIDDLE SCHOOL FAST FACTS

Facility Opened: 1969   **School Capacity**: 506   **Current Enrollment:** 576
Student Mobility: **Ethnicity**: 46%   White   5.3% Hispanic
         11.6% Entrants   40.8% African American   .9% Native American
          9.5% Withdraws   5.6% Asian   .7% Other
Special Services: *Title I*: 4.2%   *Ltd. English*: 5.2%   *Free/Reduced Lunch*: 26.7% *Spec. Ed.* 10.3%

NOTE: The focus of the pilot study is more closely related to technology than to the total program. This is simply due to the severe time limits available for the critical examination of student achievement in mathematics. With initial success and now the implementation of a new 21st Century Learning Community Centers Grant at Wilde Lake, a more comprehensive study can be conducted.

DIRECT INSTRUCTION RESOURCES

   Two primary resources were made available to grade seven teachers to use during direct instruction.
   (1.) <u>MATHEMATICS Structure and Method</u> by Mary Dolciani, Robert H. Sorgenfrey and John A. Graham. This text was chosen because of the three levels of problems found within each set of written exercises. These three levels allowed for differentiation within the wide range of abilities in the Academic Enrichment classes.
   (2.) <u>PRIMARY MATHEMATICS</u> by the Curriculum Planning and Development Division Ministry of Education, Singapore. This text was chosen specifically because of its main feature including use of the CONCRETE – PICTORIAL – ABSTRACT approach. Also the text allows students to advance by asking students for multiple solutions to one problem in a number of areas. As a supplemental text, it assures students a chance to work on fractions, decimals, and percents with each problem.

COMPUTER ASSISTED INSTRUCTION RESOURCES

   Critical to the entire effort to provide an accelerated learning environment for students were the technology partners that Wilde Lake Middle School was able to secure during the 2002-2003 school year. The partnerships began with the hardware relationship with Don Bard of the Lazarus Foundation and the providing of refurbished PC computers for classroom use. The hardware specifications were developed by E4 Answers, Inc. Tool Factory, Inc. formed a partnership with Wilde Lake Middle School with the goal of integrating into the school improvement plan by providing and creating critical software packages to meet the math goals. Two packages became of primary use to the school's math efforts as 10 MINUTE NUMERACY and TEST FACTORY both provided teachers with diagnostic and acceleration tools. The Tool Factory Inc. products are a primary part of this initial study. E4 Answers, Inc. (consulting with Tool Factory Inc.) developed the standard specifications for each learning machine, built a standard software configuration for the learning machines, and installed a LAN network within the three Academic Enrichment classrooms. This networking capability allowed teachers to assign activities, track student progress and work with the students in areas of need – all from a central database of student performance information. This was critical to student self-assessment and differentiation for acceleration. Tool Factory software was created with this centralized management of student achievement in mind.

SOCIO-EMOTIONAL LEARNING

   The after school program at Wilde Lake Middle School found three partners that could involve students in rich hands on efforts and three programs of merit for student enrichment participation. Tool Factory, Inc. web production software and E4 Answers Inc. provided the know-how to organize and run the student Triple T Website Production Company. This extracurricular activity allows students to build websites for community members. The Earth Treks Climbing Center's Shared Summits program came to Wilde Lake to provide students with a highly motivating and active outlet for enrichment. Following mountaineers online and training for trips to the Earth Treks Climbing Gym again provide rich incentives for student participation in the H.O.M.E. (Habits of Mind Exchange Program). Thirdly, Artificial Reefs Inc. and the National Aquarium in Baltimore offer direct assistance to students in the fields of Marine Biology and Animal Husbandry. Again, field experiences and hands on experiences add to the students' total well being in their quest to achieve. Please find on the next page a one-page descriptor of the H.O.M.E. Program.

SOCIO-EMOTIONAL LEARNING

WHAT IS THE H.O.M.E. AFTER SCHOOL PROGRAM?

Earth Treks Climbing Center **Habits Of Mind Exchange** *Artificial Reefs Inc.*

The mission of the Habits Of Mind Exchange Program is to provide students with a disciplined after school program that can boost their mindset toward college and career.

Three central themes, *computing*, *physical fitness* and *aquatic science*, have provided the context for Wilde Lake to build the H.O.M.E After School Program. Each theme enjoys a rallying title that brings students together for a specific set of goals. Within our *computing* theme entitled **Triple T Productions**, students have joined the technology team at Wilde Lake Middle School by fully immersing themselves into our Triple T Website Production Company. The Triple T Production Co. boasts two professional mentor organizations. First, is Tool Factory Inc. and the individual liaison to the school is Tool Factory Inc. President, Heather Chirtea. Second, E4 Answers, Inc. and its President Brian Wessner, assists in project organization, design, programming and publication of web sites. The physical fitness theme challenges students with the physical preparations that accompanying rock climbing and mountaineering. Entitled **Shared Summits**, this program is proud to partner with the Earth Treks Climbing Center as the professional mentoring organization and have Earth Treks' President and world mountaineer Chris Warner being the individual school liaison. **Aqua Havens for Education** is supported by five professional organizations including founder Artificial Reefs Inc., The National Aquarium in Baltimore, Aqualand Inc., Princeton University's Research Outreach Committee and the American Cichlid Association. Students' disciplined efforts with individual mentors from these aquatic organizations fall into either a Collaborative Aquarium Team or an Experiment Work Group. Each team is given primary responsibility for the care and maintenance of a closed aquatic ecosystem and in communicating with the "public" about their project.

One additional note is that participation in the H.O.M.E. Program will award students service learning hours and a letter of commendation for student resume building.
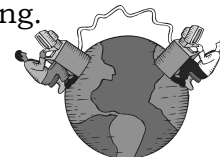
H.O.M.E.
Habits Of Mind Exchange
For Excellent Academic Futures

Tool Factory, Inc.

Lazarus Foundation   *E4 Answers, Inc.*

After School Schedule for 2003-2004
- o 2:35-3:00 Daily Homework Completed
- o 3:00-3:40 Accelerated Computer Assignments
- o 3:40-4:30 H.O.M.E. Experiences

National Aquarium in Baltimore

"Travel to Learn Experiences" supported by
- ✓ The National Aquarium in Baltimore
- ✓ Earth Treks Climbing Center
- ✓ Lazarus Foundation

Note: All H.O.M.E. students are eligible for "Travel to Learn Experiences".

Triple T Company	**Shared Summits**	**Aqua Havens**
➢ Triple T Production Company ➢ Webmasters Program	➢ Physical Fitness or Hiking Activity ➢ Virtual Mountaineering	➢ Animal Husbandry ➢ Marine Biology

EVALUATION DESIGN

The pilot study's action research design addresses four major categories. The full study to be implemented during the 2003-2004 school year will again use these four major categories, but include work in eleven additional subcategories. Our full design includes the following.

MAJOR CATEGORY – ACTIONS AND INVOLVEMENT
      Subcategory – Content (relevant and timely)
      Subcategory – Process (conduct and organization of the program)
      Subcategory – Context (the physical environment)

MAJOR CATEGORY – STUDENT ACADEMIC RECORD
      Subcategory –Cognitive (specific content)
      Subcategory – Psychomotor (Acquired skills and content)
      Subcategory – Attitudes student participants)

MAJOR CATEGORY – STUDENT HABITS OF MIND
      Subcategory –Cognitive (Standardized test record over the past year)
      Subcategory – Psychomotor (Acquired skills and content)
      Subcategory – Attitudes (Ratings instruments by participants for computer use)
      (A pre- and post instrument detailing student self-perceptions by domain)

MAJOR CATEGORY- TEACHER RECORDS
      Subcategory – Alignment with Standards (Mathematics and technology)
      Subcategory – Anecdotal Records by teachers

Each major category and subcategory is tied directly to a research instrument including the following tools.

- ✓ Student Rating Instruments
- ✓ Time on Task Sweep Instrument
- ✓ Standardized Test Scores
- ✓ Test Factory Reporting Tools
- ✓ Numeracy Teacher Tools
- ✓ Habits of Mind Report summarizing student completion rate, participation and attendance
- ✓ Education Literature review of the research

STUDY FACTS

Total number of grade seven students in the study = 66

Total number of students in treatment group = 43

Total number of students examined not in treatment group = 23

Total number of teachers involved in the pilot = 2

Basic AE Treatment Period – Total of 13 teaching days X 50 minutes per day (650 minutes)

STATEMENTS FOR REVIEW

The following statements describe in detail actions attributed to the major categories and subcategories.

ACTIONS AND INVOLVEMENT

Subcategory – *Content (relevant and timely)*

❑ Content for instruction included the State of Maryland's seven Domains and thirty Objectives.
❑ 10 Minute Numeracy software had sets of tests using teacher content creation tools provided with the software to match specific content to the domains and objectives of the Maryland Functional Math Test.
❑ The treatment period was administered one month prior to the administration of the paper/pencil State of Maryland Functional Exam.

Subcategory – *Process (conduct and organization of the program)*

❑ The pilot study was limited to a seventh grade set of students. Labs of similar configurations have been built in grade 6 and grade 8 for the long-term study.
❑ The treatment was delivered in a specially designed 80-minute time block entitled Academic Enrichment. Each student received 50 minutes of math treatment over a total of 13 classes during the month of March. Time was spent between 10 Minute Numeracy assignments and practice sessions on the Test Factory website.
❑ Students included in the program included special education students, ESOL students and students working to pass the functional math test.

Subcategory – Context *(the physical environment)*

❑ The program was administered in a room specifically designed for Computer Assisted Instruction. The room includes a Local Area Network of 15 refurbished Pentium II machines connected to a server. A directed teaching station exists in the center of the room with the machines in a visible line along two walls. (Please refer to the classroom diagram on page 6 of this document.)

MAJOR CATEGORY – STUDENT ACADEMIC RECORD

Subcategory –*Cognitive (Standardized test record over the past year)*

❑ Student academic records were pulled and added to the database to track student progress on previous MFMT tests.

Subcategory – *Psychomotor (Acquired skills and content)*

Server records
❑ Student performance (# of questions attempted and the # of questions correct on Numeracy problem sets)
❑ Student performance (# of tests attempted and the results by domain and objectives)

Subcategory - *Attitudes (Student Ratings instruments by participants for computer use.*

❑ A pre- and post instrument was administered detailing student self-perceptions by domain

MAJOR CATEGORY – STUDENT HABITS OF MIND

Subcategory – *Successful Habits (Completion Rate)*

Server records

❑ Student performance (# of questions attempted and the # of questions correct on Numeracy problem sets)
❑ Student performance (# of tests completed and the results by domain and objective)

Subcategory – *Program Participation (Time on Task Sweeps)*

❑ Student time on task was recorded during computer-assisted instruction and during direct textbook driven instruction. Note that students worked independently during computer assisted instruction times.

Subcategory – *Attitudes*

❑ A pre- and post instrument was administered detailing student attitudes while working within the program.

MAJOR CATEGORY- TEACHER RECORDS

Subcategory – *Alignment with Standards (Mathematics and technology)*

❑ This study is being designed in accordance with the standards for the International Standards for Technology in Education.
❑ This study specifically targets the State of Maryland's Functional Math Test, its domains and objectives.

Subcategory – *Anecdotal Records by teachers*

❑ The two teachers directly involved in the pilot study were administered a ratings instruments related to the effectiveness of the program.
❑ The two teachers directly involved in the pilot study were given a set of four open-ended questions to respond to.
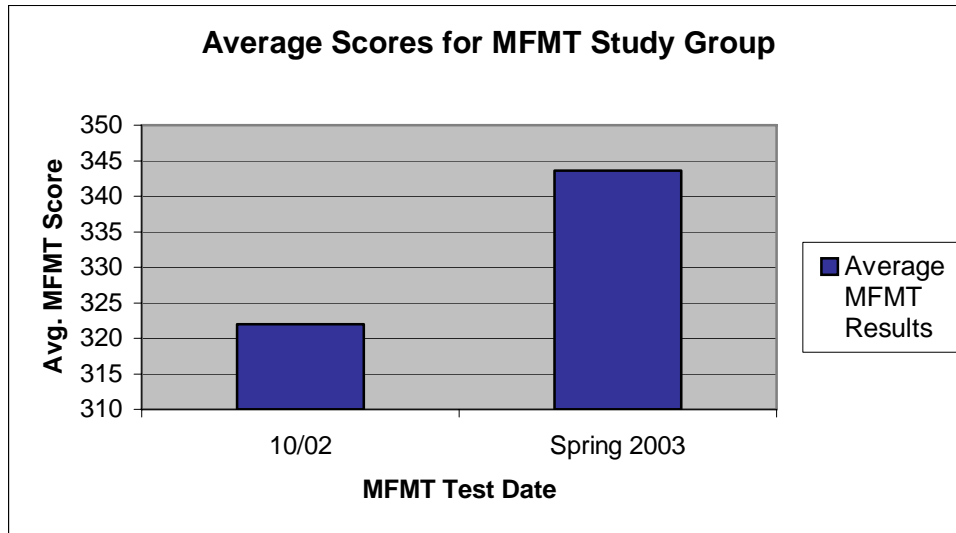
RESEARCH FACTS AND FINDINGS

✓ Overall seventh grade students reviewed = 66
✓ Students reviewed not in the treatment group = 23
✓ Students reviewed in the treatment group = 43 **

**NOTES:

1. Treatment group was a group of students identified as below average and were placed into Academic Enrichment classes to enhance their math skills. The non-treatment group were placed in an average math class and not included in the Academic Enrichment classrooms.

2. The treatment group had regular access to the technology enrichment classroom including the classroom computer network with the Numeracy/Test Factory Computer Assisted Instruction tools. The non-treatment group did not have access to these CAI tools.
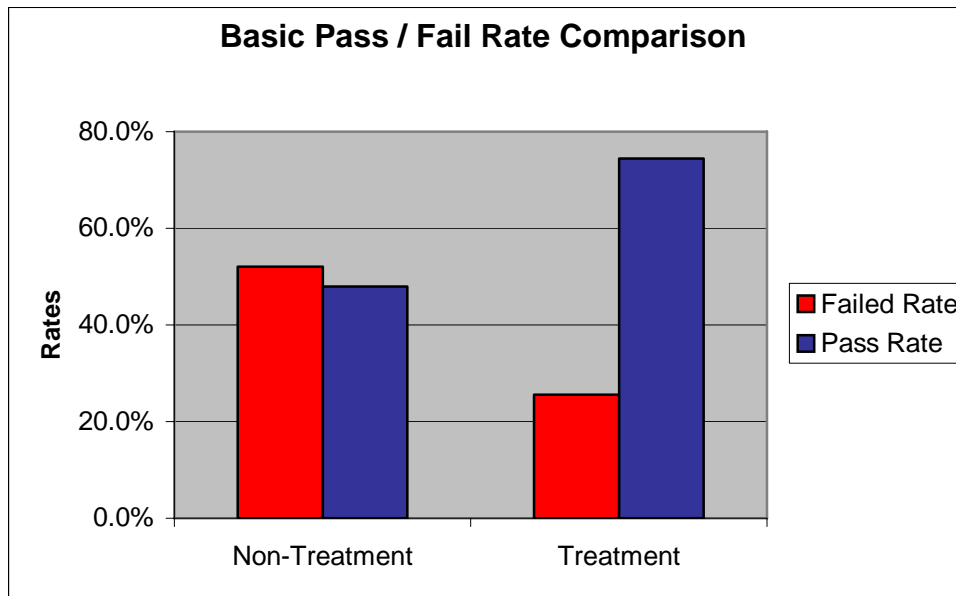
AVERAGE SCORES FOR MFMT STUDY GROUP

Below is the overall summary of MFMT scores for our full study group. Note the increase in average scores of 22 points between October 2002 and Spring 2003 (6 months of part-time math instruction in Academic Enrichment classes in addition to their full time mathematics class).

Average Scores for MFMT Study Group

A bar chart titled "Average Scores for MFMT Study Group" with y-axis "Avg. MFMT Score" ranging from 310 to 350, and x-axis "MFMT Test Date." The 10/02 bar is approximately 322 and the Spring 2003 bar is approximately 343. Legend: Average MFMT Results.

BASIC PASS/FAIL RATE COMPARISON
BETWEEN TREATMENT & NON-TREATMENT GROUPS

- Below are the details of where the improvements occurred. For non-treatments students, the probability of passing was a 50-50 proposition, with passes to failures at about a 1-to-1 ratio. Actual numbers 52% fail, 48% pass.
- With the Numeracy/Test Factory Treatment, which occurred over a 6-8 week period (13 class sessions), the pass rate approached 75%, making the pass-to-fail ratio 3-to-1. Failure rate at 25.6%, pass rate 74.4%

Basic Pass / Fail Rate Comparison

A bar chart titled "Basic Pass / Fail Rate Comparison" with y-axis "Rates" ranging from 0.0% to 80.0%, and x-axis categories "Non-Treatment" and "Treatment." Non-Treatment: Failed Rate ~52%, Pass Rate ~48%. Treatment: Failed Rate ~25.6%, Pass Rate ~74.4%. Legend: Failed Rate, Pass Rate.
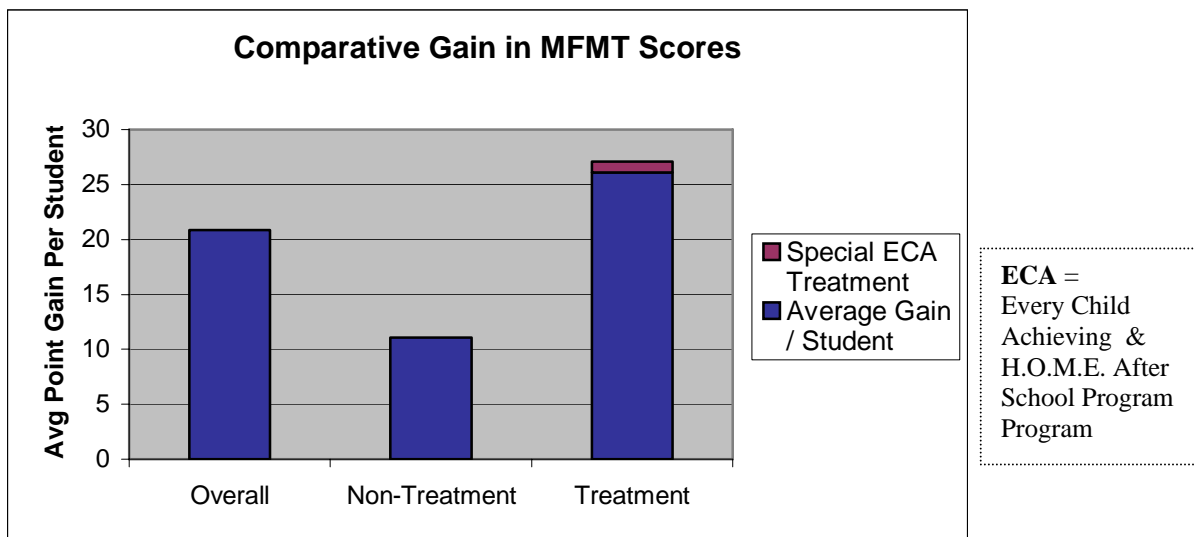
PASS RATE BASED ON 10 MINUTE NUMERACY USAGE

➢ Below is the improvement when 10 Minute Numeracy is added to the Test Factory treatment.

➢ Of the 43 students in the full Treatment group, we collected detailed 10 Minute Numeracy achievement data for 18 of those students.

➢ Overall, students who used the Numeracy / Test Factory combination experienced an 88.9% pass rate.

➢ Of the students who completed less than 250 Numeracy questions, 40% passed the MFMT.

➢ Of those 18 students, 100% who completed more than 250 Numeracy questions, passed the MFMT.

Pass Rate Based on 10 Minute Numeracy Usage
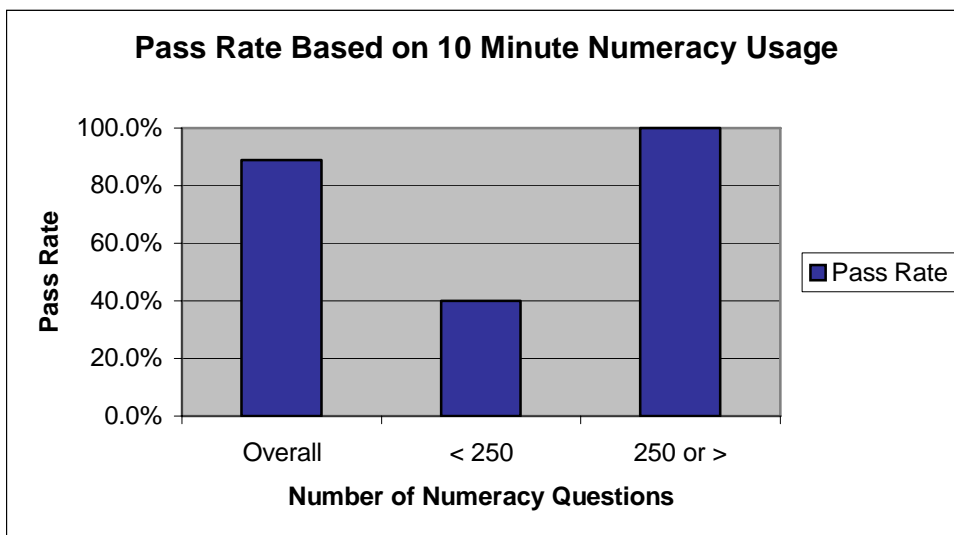
COMPARATIVE POINT GAIN IN MFMT SCORES

➢ Below is an examination of the 22-point average gain in MFMT scores from 10/02 through Spring 2003.
➢ Non-treatment students gained 11 points on average across their MFMT scores.
➢ The average gain for treatment students is 26 points.
➢ ECA students (students of critical need) received additional individualized attention. These students are normally given a very low probability of passing the MFMT, as identified through the Guidance Department. These critical need students had a gain of 27 points. The students within this group had the highest individual point gains of all students and had an overall MFMT pass rate of 79%. Within the ECA group, it should be noted that 5 students of the ECA group improved by 30 points or more, with two students improving by 50 points.

Comparative Gain in MFMT Scores

ECA = Every Child Achieving & H.O.M.E. After School Program Program

STATEMENTS OF FACT

➢ Seventh grade has achieved a 90% pass rate over the entire grade level. This is the highest passing percentage at this grade at this time of the school year in the recent history of Wilde Lake Middle School.
➢ Average number of Test Factory practice tests completed in the treatment group – 6 tests
➢ Of 15 students who completed 10 or more Test Factory practice tests, 14 passed the MFMT, a rate of 94%.
➢ A pre- and post attitudinal survey was administered to students in September and in May. The results are not included precisely in this write up due to the many changes that took shape as the pilot study was put into place. It was also not administered to the non-treatment group. What can be definitively said is that among the treatment group of students, all student responses were either equal to or higher in terms of student beliefs in their ability to perform well in the following categories. Fractions; Word Problems; Formulas; Decimals; Geometry; Long Division; Math Vocabulary; Times Tables; 60 Question Tests; Mathematic Properties; Use of Variables and Percents.

TEACHER RECORDS and FEEDBACK FORM – 2 Pilot Teachers

Question #1

SCALE

5	4	3	2	1
Great Increase	Some Increase	Same Involvement	Less Involvement	Poor Involvement

How would you rate student involvement in MFMT practice after the implementation of the HOME Program?

Average Rating 5.0

Responses:
　　　　Teacher 1: "The introduction of computer assisted instruction completely changed the relationship between the teacher and student as well as the student's relationship to their work. Teachers became facilitators of student work. The CAI methodology provided each student with immediate feedback and promoted self-analysis."

　　　　Teacher 2: "Computer assisted instruction in math meets the needs of the individual students. This type of instruction paired with direct instruction has resulted in giving the students an opportunity to strengthen areas of weakness. Because the HOME Program is MFMT driven, students are better prepared for formal testing."

Question #2

SCALE

5	4	3	2	1
Great Increase	Some Increase	Same Involvement	Less Involvement	Poor Involvement

How would you rate the ease of planning and preparation during computer-assisted instruction as compared to the planning and preparation for textbook and pen/pencil tasks? Circle one and comment please.

Average Rating 5.0

Responses:
　　　　Teacher 1: "The average time to prepare the treatment group with CAI generated assignments was 30 minutes. During the administration of a set of problems, students could immediately be given a new set of problems individually. (Upon completion of the first round of assignments.)"

　　　　Teacher 2: "Very little planning and preparation is needed. Students set goals for themselves and receive immediate feedback from the data that is computer stored. Computer assisted instruction provides time on task and meets the needs of the students individually. Math problems are shifted to the students by the teacher's manipulation to provide continuous practice in areas of weakness. This is done for each student while the teacher is able to monitor individual progress."

Question #3

SCALE

5	4	3	2	1
Great Increase	Some Increase	Same Involvement	Less Involvement	Poor Involvement

How would you rate your ability to implement differentiation and address student needs during computer-assisted instruction as compared to textbook and paper/pencil tasks?

Average Rating 5.0

Responses:

  Teacher 1: "Both immediate feedback and teacher tools allowed for student and teacher driven differentiation. Failed items and objectives on Test Factory could be addressed directly by individual teacher content or Numeracy sets of questions as entered by the teacher or using Numeracy's bank of questions."

  Teacher 2: "I have been able to provide optimum learning opportunities and address individual needs through the technology resources. The use of the computer assisted instruction changes student attitudes towards learning and toward the subject. Students are not compared collectively. Each student has an individualized computerized plan which replaces the dreadful paper/pencil task for some students."

Question #4

SCALE

5	4	3	2	1
Much Higher	Some Increase	No Change in Success	Low likelihood of Success	Unlikely To Succeed

How would you rate the likelihood of student success on the Maryland Functional Math Test by students involved in the HOME Program? Circle one and comment.

Average Rating 5.0

Responses:

  Teacher 1: "The dramatic increase in student engagement, immediate student feedback after each Numeracy question and after a Test Factory set of questions and the increased capacity in a teacher's ability to review student performance GREATLY increased the likelihood for student success. The after school combination of computers and high activity made attendance excellent."

  Teacher 2: "The HOME Program mirrors real-world applications. Because of this program, student thinking skills are accelerated; they learn to solve problems in multiple ways and will be able to perform well on the MFMT."

SUMMARY

The preceding document is a preliminary study intended to prepare for a 2003-2004 year long study followed by a more extensive three-year examination of accelerated learning using the integration of a specific set of direct instructional methodologies, a precise application of computer assisted instruction and student participation in disciplined socio-emotional learning opportunities. The following two charts are provided to summarize the goals, actions, results and future of this study.

PROGRAM RELATED GOALS

Goal	Action	Results	Future
1. Provide meaningful change for Academic Enrichment and Every Child Achieving Students	******Conduct an educational review of the Change literature. ******Identify an independent evaluation consultant.	******Identified VISION, SKILLS, INCENTIVES, RESOURCES AND ACTION PLANNING as the keys to program success. ******Hired Dr. Rob Kadel of Johns Hopkins University to review the evaluation design ******Won grants from Toshiba America Foundation, Horizon Foundation and helped with the successful writing of the Wilde Lake Community 21st Century Grant	******Continue to pursue grants, partnerships and planning that meets the growing or changing mission. ******Increase student after school and summer school participation in the full program design including CAI, Direct Instruction and Socio – Emotional Learning
2. Identify the best use of technology to meet the Accelerated Learning Goals of the program.	******Conduct an educational review of technology studies and use with "at risk" students. ******Write grants and proposals to acquire technology resources	******Built three networked labs at grades 6,7 and 8 with the same configurations and software available. ** Selected and installed Tool Factory learning software to meet program goals.	******Increase server capacity to incorporate new focus areas as identified within the School Improvement Plan. ** Evaluate additional Tool Factory software.
3. Define "Accelerated Learning" and applied the definition's principles to the WLMS Accelerated Learning Program for students in need.	******Conduct an educational review of literature that links accelerated learning and "at risk" students	******Defined "accelerated learning" for the WLMS program (see page 5)	******Follow a policy of continuous improvement to examine and refine the definition, actions and results.
4. Implement an After School Program that utilizes both the academic goals and includes an enrichment socio-emotional learning component.	******Integrated, on a pilot basis, in grade 7, the socio-emotional components of the H.O.M.E. (**H**abits **O**f **M**ind **E**xchange) Program during the Grade 7 Every Child Achieving Program.	******Achieved an attendance rating of 96.4% in the Every Child Achieving Program.	******Follow a policy of continuous improvement to evaluate and refine the H.O.M.E. Program.

STUDENT AND TEACHER RELATED GOALS

Goal	Actions	Results	Future
1. Provide teacher tools to increase differentiation, data-driven decision making and meet the accelerated learning definition.	**Signed 3 Technology partnership agreements – Tool Factory, Inc., E4 Answers, Inc. & the Lazarus Foundation **Identified and helped to create software to meet goal 1.	**With partners, identified and installed needed hardware/software to meet Goal 1. **Designed and installed networked mini-computer labs for grades 6,7,8.	**Full year implementation of teaching tools and evaluation design. ** Examine possible expansion of acceleration "triangle" to reading and writing
2. Increasing student time on task in learning MFMT skills and overall math fundamentals. Accelerate student learning and support "at risk" students as they work to pass the MFMT test.	**Provided a local area networked classroom mini-computer lab with software specific to goal 2. **Tracked math problems completed as students utilized the CAI tools 10 Minute Numeracy Tests and Test Factory software	**Tracked computer use and classroom instruction time for 6 weeks prior to the MFMT exam. **Implemented an Every Child Achieving After School (H.O.M.E.) Program using the CAI tools and the Socio Emotional Program of Shared Summits **Achieved an overall pass rate of 90% in grade 7	**Install new servers to increase tractability of student work in math, reading and writing. **Provide higher-level math materials for further student acceleration. **Conduct a three-year study to document student acceleration and track student HS coursework **Implement program across grades 6-8.
3. Provide student-learning tools that place the learners more in control of their own learning and improve student attitudes toward the MFMT challenge.	**Chose both 10 Minute Numeracy Test and Test Factory software because both programs provide immediate feedback and diagnostic information to teacher and student. **Tracked total student completion and scores for all 10 Minute Numeracy and Test Factory practice tests. **Conducted a pre- and post student attitude survey	**100% of students, who completed a minimum of 250 Numeracy questions and 10 Test Factory tests, passed the MFMT Test. **Achieved an average gain of 27 points for students in the Treatment Group as compared to an 11-point improvement for non-treatment students. **All student attitudinal responses either matched or improved student pre to post attitudinal survey responses.	**Implement a year-long calendar of Computer Assisted Instruction and program evaluation. **Include additional diagnostic breakdowns of student learning **Utilize administration tools within Test Factory to examine individual student groups including ethnicity, FARMS and other relevant data
4. Provide an overall program that does not let a child's deficiency become their identity.	**Formed four business partnership agreements – Earth Treks Climbing Center, E4 Answers, Inc., the National Aquarium in Baltimore and Artificial Reefs, Inc.	**Initiated programming in three highly motivational enrichment areas – Marine Biology, Mountaineering and Website Production. ** Created 100 page school website.	**Continue to expand and build the socio-emotional components of the Habits Of Mind Exchange Program (H.O.M.E.) **Improve the tracking of student participation

RECOMMENDATIONS

1) The success of the direct instruction, computer assisted instruction and specialized socio-emotional learning components in an after school program for "at risk" students warrants its continuation with expanded work in evaluation, including student interviews.

2) The findings are based on a short-term use of the computer assisted instruction tools. It is recommended that a full year timeline of student computer use be implemented at all grade levels. ***The full evaluation design should be administered.***
   NOTE: This was a pilot study to set up a full year's examination of the practices being implemented at Wilde Lake Middle School. A great deal more data findings and reporting would go into a full year's study of student achievement using this evaluation design and all the instruments to thoroughly examine each of the three components (Direct Instruction; CAI; After School Programming).

3) The diagnostic and differentiation tools within the Tool Factory Inc. software was definitive in its value in that 100% of the students who met teacher expectations on completing 10 Minute Numeracy and Test Factory assignments passed the MFMT. A full year's treatment should have even more dramatic results.

4) A strong parent awareness campaign would benefit the full mathematics enrichment program. The home use of Test Factory clearly gave a number of students an advantage and again resulted in 100% passage if a number of Test Factory practice tests were completed at home or at the public library.

5) The Direct Instruction resources gave teachers two text-driven accelerated learning tools. It is recommended that both the Singapore texts which provided a resource for teachers to teach math as an integrated system, and the Dolciani text which provided differentiation and acceleration opportunities for students and teachers be continued as a classroom resource.

6) It is recommended that additional questions be imported through the 10 Minute Numeracy Teacher Management tool. In 6 weeks students completed the 300 imported MFMT questions quickly and efficiently.

7) The data should be further broken down using the new tools being provided within the Test Factory software. This would include the examination of question/response by domain and objective. Additional analysis, sorting by ethnicity, Free and Reduced Meals (FARMS) and other critical data categories should be done to further administration, school improvement team and individual staff data-driven decision making.

8) The study warrants consideration of expanding the Triangular (Direct Instruction; Computer Assisted Instruction and Socio-Emotional Learning) components into additional critical needs areas – i.e. Reading and Writing.

9) Teacher training in math content delivery and data gathering and storage is needed if the plan is to be implemented across grade levels.

10) The Howard County Public School System goals of "closing the achievement gap" in 2005 and in 2007 for all students is being addressed in this pilot study. A closer examination of the findings is recommended to define students "below average" performance as compared to their "average" peers.

11) If a second more comprehensive study is completed in 2003-2004 with similar results, summer school and academic enrichment class goals will need to be reexamined. The "accelerated learning" will warrant greater opportunities for students.

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