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NEW JERSEY



# **COLLEGE OF NEW JERSEY GRADUATE SCHOOL OF EDUCATION**

Brainchild Research Project  
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# Executive Summary; New Jersey College Graduate School of Education Brainchild Research Project

## *Brainchild At-Risk Student Achievement Increase of 19%*

### ■ Background

The State of New Jersey mandates that students who test below the acceptable norms on the MAT test **receive additional instruction**. This mandate must be assured and included in each school's Educational Improvement Plan that is approved by the State Department of Education. The additional instruction is typically provided by extra teachers. Due to budget cuts, the Franklin Elementary School lost many extra teachers. To provide the mandated extra assistance, Franklin started classroom and take-home instruction (engaging parents as tutors), with Brainchild portable learning devices and software. A study documented the results of Brainchild usage.

### ■ Population

Students at Franklin Elementary School, Trenton School District, New Jersey. The Trenton district is classified as an underachieving school district with a preponderance of students not achieving at grade level in reading, language arts and mathematics.

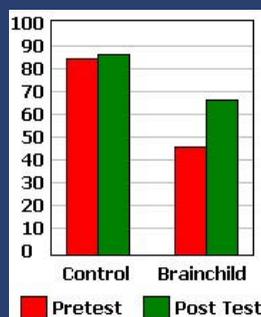
### ■ Null Hypothesis

The instructional delivery system of Brainchild, used in the classroom and at home, will make no significant difference in the achievement levels of students on curriculum-based assessment tests.

### ■ Methodology

The Unit 2 Test of the Houghton/Mifflin Reading Unit was given to 30 students as a pre-test for the study. This curriculum-based language arts and reading test is derived directly from the textbooks students use in the classroom.

The 15 lowest-scoring students became the Brainchild Test Group. These "at-risk" students performed lower than the acceptable norms. The 15 highest-scoring students became the Control Group. The higher-performing Control Group received the regular reading and language arts instruction. The Brainchild Test Group added Brainchild to its regular instruction, in class and at home with parents. Thirty days later, the Houghton Mifflin Reading Unit Test 3 was given as a post test.



### ■ Results

The Brainchild Group score increased from 47% to 66%...  
**a gain of 19%.**

The Control Group average score increased from 85% to 86%...  
**a gain of 1%.**

# Increasing the Basic Skills Levels of At-Risk Students Through Brainchild Extended Learning Strategies



Franklin Elementary School is located in the city of Trenton, N.J. and is a part of the Trenton School District. The school has kindergarten through fifth grade and houses seven special education classes that are non graded. The student body is ethnically diverse but predominantly white. The Trenton School District is classified as an underachieving district with a preponderance of its students not achieving at grade level in the areas of reading, language arts and mathematics. Students at Franklin Elementary traditionally score the highest on achievement tests, such as the Metropolitan Achievement Test (MAT) and Californian Achievement Test (CAT), than any students in the district. The school has a strong academic leader, and is managed through a cooperative venture known as Site Based Management. A site-based managed school enables both parents and teachers to have an equal voice in determining the needs of students and in determining the programs most likely to benefit their specific student population.

The State of New Jersey mandates that students who test below the acceptable norms on MAT test receive additional Basic Skills instruction. This additional Basic Skills instruction was provided by extra teachers whose sole purpose was to provide additional instruction in reading, writing and language arts. This instruction may be delivered through a pull out program or an inclusionary program. Due to a cut in the operating budget of the Trenton School District, Franklin Elementary School lost their basic skills teachers.

The State of New Jersey, however, still mandates that students receive this additional instruction. This mandate must be assured and must be included in each schools Educational Improvement Plan that is approved by the State Department of Education. To address the need to provide this mandated extra assistance in basic skills education for Franklin's students; Franklin's answer was to order Brainchild's program of software and mobile learning units with remedial software in reading, language arts skills and mathematics.

The material presented from the Brainchild Corporation suggested that this program would be of assistance to Franklin's underachieving students.

With the cooperation of the Brainchild Corporation, and the Graduate Education Department from the College of New Jersey a project was developed to determine if the program would make a difference in the level of achievement in Franklin Elementary's lowest achieving students.

It was the principal's goal to allow basic skills students have access to computers, through an organized plan, during the school day and have the opportunity to take mobile units home to do additional work with their parents. The Brainchild mobile units record students' progress and record the length of time.

## — LITERATURE —

The infusion of computers into everyday life of a child is reality, as educators we need to find effective uses for computer technology in school life that will enable students to develop basic and critical thinking skills. Computer tools that students and teachers find to be productive and helpful in the school environment are the same tools that are productive and helpful in the real world. Computer tools should be viewed very broadly and should include computer-assisted instruction (CAI) for direct and indirect instruction, proactive, and application of skills, concepts and principles being studied.

Research findings on CAI in its various forms have been quite consistent and supportive. More than 200 studies conducted comparing the effect of traditional teaching with computer teaching (measured by student achievement scores) showed clearly at the elementary, secondary, college and adult levels that learning produced by CAI was within the level of educational significance. Considerable evidence demonstrates the effectiveness of computers in teaching math, science, reading and language arts and the cognitive skills of problem solving and critical thinking (Daughtry, 1994).

The effective use of computer technology requires the presence and influence of two major clusters of factors (Hall, 1996): 1) A supportive environment in the community and schools, and 2) The training and empowerment of teachers.

The literature reveals several strong contributors to the successful use of computer technology by teachers and students in a educationally deprived environment: (Ramirez-Smith, 1995)



- a. The commitment and involvement of the community school board, administration and teaching staff.
- b. The recognized need to improve student skills.
- c. The existence of up-to-date curriculum plans and a planning process.
- d. Systematic instruction.
- e. A positive school climate
- f. Faculty training to use technology.

Effective leadership is the key to successful implementation of technology. Studies have consistently shown that when school leaders assist teachers in their primary job of educating students, and when the resources are available to meet the needs of the teachers, effective learning occurs.

## — WHAT BRAINCHILD SAYS? —

The Brainchild program is a powerful action system for personal, educational success. Success in sports or just about anything is a matter of attitude and practice. Students develop a great attitude when they experience small, regular successes towards specific goals. With this learning system, it is easy to discover weak areas and fix them with instant simple tutorials. Practicing concepts strengthens knowledge. Scores improve. Students build confidence by helping themselves.

Brainchild was invented to give students an easier, self-paced way to study.

## — RESEARCH QUESTION —

1. Does this type of instruction improve students' ability levels in the areas of reading and language arts?

## — NULL HYPOTHESIS —

The instructional delivery system of Brainchild will make no significant difference in the achievement levels of students on curriculum-based assessment.

## — TERMINOLOGY/VOCABULARY —

1. Curriculum-Based Assessments – Tests that are derived directly from the textbook students are using in the classroom. Traditionally the textbook publisher develops these tests.

## — LIMITATIONS —

Due to school constraints, the study would be 30 days with the population limited to one-second grade class.

## — ASSUMPTIONS —

1. When parents signed that they were willing to work with students at home, that in fact the work was actually completed.
2. The only significant change in reading instruction during this time period was the introduction and extensive use of Brainchild. Any increase in the reading ability of these children during this time period will be attributed to the use of Brainchild.

## — METHODOLOGY —

The Unit 2 test of the Houghlin/Mifflin Reading Unit was given to 30 students in a second grade test. Their tests were evaluated. The Unit 2 test is a comprehensive Curriculum Based Assessment Test that has 35 multiple choice questions. The questions involve skills taught during that particular unit in both areas of language arts and reading comprehension. Questions on these Unit Tests are asked at both the concrete and inferential level.

The 15 students who scored the lowest on the test would be the experimental group and would receive the Brainchild computer for a 30-day period. The control group would receive the regular reading and language arts instruction.

At the conclusion of the 30-day period, the next level of the Curriculum Based Test Unit 3 would be given to all 30 students. Parents were sent a letter requesting their permission and assistance in allowing their children to bring Brainchild home every day after school and on the weekends. They were requested to work with their child one hour each evening for the 30-day test period. The parents were to record all the time spent at home on the Brainchild and were to record all students' progress (Appendix A).

In addition, students had access to their Brainchild units Mondays, Tuesdays, Wednesdays and Fridays for one hour of class time. During this time the teacher would supervise their use of the computer and determine if students were properly placed in the level of disks/cartridges being used. Students also had the option to change subject matter between reading and writing.

## — THE RESULTS —

Students were given the Unit Test 3 from the Houghlin/Mifflin reading program after the completion of that reading unit. Tests were again scored. The results of this test are shown in the following table.

<i>Students Name</i>	<i>Unit 2 Test Errors</i>	<i>Unit 3 Test Errors</i>
Madison	08	03
Chris	00	00
Rachel	17	15
Michelle	00	01
Jessica	11	08
Charles M	01	02
Charles P	05	12
Charles T	02	02
Shane	23	19
Fred	05	07
Alysia	17	13
Jamie	05	05
Jessica	27	22
Ingrid	07	04
Bill	10	05
Jorge	21	16
John	06	04
Robyn	26	20
Lisa	07	08
Donte	09	05
Anne	08	07
Anthony	10	06
Felicia	08	08
Brandon	14	10
Patty	02	04
Matthew	22	19
Joan	09	09
Gabrielle	12	10
Carol	09	08
Jimmy	05	03

The average decrease in errors for reading comprehension went from 18.5 to 12 in the experimental group. This translated to the results being statistically significant at the .05 level. The null hypothesis was rejected. The control groups decrease in errors on the pre and post test was indistinguishable. The **pre test average was 5.33 and on the post test was 5.06**

## — DISCUSSION —

The results of this study mirror the findings of the experimental and control groups at Highland Elementary School in Immokalee Florida and the Brainchild program in Virginia. In their study the 5th graders, the Control Group cumulatively achieved a 269 point gain in the SAT Math and Reading results. The Brainchild group achieved a 448-point gain, a 40% higher overall improvement. The Brainchild Test Group outgained the Control Group 60% in Math scores and 27% in Reading scores.

## — IMPLICATIONS —

The Brainchild program appears to offer a technology tool that is effective and enables teachers to reach even the most educationally disenfranchised child. Many of the new research methodologies that are being employed by districts such as the Comer Project from Harvard University stress the need to involve parents and the community in the education of all children. To a generation of parents who are not computer literate, Brainchild is a benign way to introduce them to computers. Its simplicity allows parents to work immediately and comfortably with their children.

## — RECOMMENDATIONS —

Teachers and principals can directly impact classroom behavior of students and their participation in class by creatively developing programs to disperse the units among students. For example, the principal of Highlands Elementary School in Immokalee Florida uses the units as a reward for good behavior. Children earn the privilege of taking the Brainchild home for the weekend for a week of good behavior. Other schools have discussed the use of Brainchild with their learning disabled population and parent involvement programs with economically advantaged families.

Collaborative and cooperative education among students would be significantly enhanced by the use of Brainchild. When students work together, advantages are realized. Pairing educationally capable students with students who are at risk would be a good use of the Brainchild technology. In 26 months approximately 1000 schools purchased Brainchild technology through Title 1 grants and educational grants.

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