New Jersey Graduate School of Education

Brainchild Research Project

By: Leslie Daughtry-Brian, Ed.D

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.

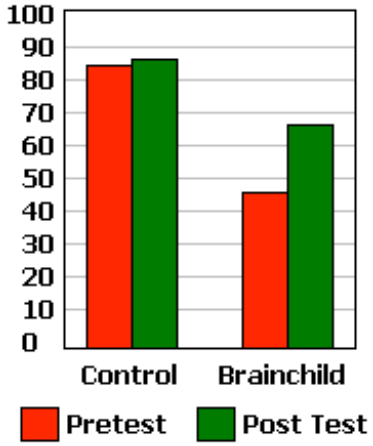
Methodology
The Unit 2 Test of the Houghton/Mifflin Reading Unit was given to 30 students as a pre-test for the study. This curriculum-based language arts and reading test is derived directly from the textbooks students use in the classroom.

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 15

Brainchild computers with remedial software in reading, language arts skills and mathematics.

The material presented from the Brainchild Corporation in 1995 suggested that this educational device would be of assistance to Franklin's underachieving students. However, the Brainchild Corporation has no research data to back up its claims. According to the developer of Brainchild Corporation, there is only anecdotal evidence from teachers and principals supporting the worth of the device. There is a desperate need for a scholarly empirical study. There are many educators claiming that Brainchild has helped raise their standardized test scores in their schools. There is evidence of higher ITBS and SAT 9 scores for 4th and 5th graders from Virginia and Florida.

With the cooperation of the Brainchild Corporation, who provided the extra software, and the Graduate Education Department from the College of New Jersey (formerly Trenton State College, Trenton NJ) a 30-day project was developed to determine if these computers 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 these computers, through an organized plan, during the school day and have the opportunity to take the computers home to do additional work with their parents. The Brainchild computers are accompanied with small progress books that parents and students use to record students achievements on tests and record the length of time students spent with their computer.

The Brainchild Computer is described by The Technological Horizons in Education Journal (September 1995) as a small device approximately the size of a VHS videotape. They weigh approximately four pounds and run on three AA batteries. The software for the Brainchild is interchangeable cartridges. It features a video display screen and twelve thumb operated keys. Its disks (cartridges) are

approximately 2 inches by 2 inches. The computer only needs to be turned on with a disk inserted to make it functional. Students push buttons to make selections and answer questions. There is no level of computer literacy required to operate the unit. As the Journal of Technological Horizons in Education (September 1995) explains questions are presented in random order, with underlying concepts explained, discouraging rote memorization. Students and teachers can track progress through a Personal Planning Guide, which serves as a record of performance.

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 prior to 1995 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 Personal Learning System 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 and easier, self paced way to study.

Having a son that was shy and easily embarrassed in class made this a top priority for the inventor.

RESEARCH QUESTION

1. Does this type of computer assisted 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 tests.

TERMINOLOGY/VOCABULARY

1. Curriculum Based Assessment Tests – 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 with these computers, 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.

Improvement in Errors

Students Name	*Unit 2 Test Errors*	*Unit 3 Test Errors*
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 take home 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 Portable Learning Computer appears to be a technology tool that is effective and enables teachers to reach even the most educationally disenfranchised child. All students involved in this project used the computer without prompting. This instrument is a way of introducing the concept of technology to parents in a low cost way. 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.

Brainchild can be used as a behavior manager. Students can compete to take the machines home. Through a behavior modification program or token system, students can earn the designated amount of points needed to take a Brainchild home.

RECOMMENDATONS

Along with the Brainchild computer needs to be instruction from the teacher to students on how to learn, so they understand more of what they read. Teachers should follow students progress charts in the accompanying guide. This will enable teachers to determine and ensure that every student is mastering the

educational concepts stressed in the Brainchild program.

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 such as those sponsored through Coca-Cola.

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Leslie Daughtry-Brian is currently Director of Education at the Delta School

(Philadelphia, PA). The Delta School is a member of the alliance of Commonwealth of Pennsylvania approved private schools which is licensed to serve severely emotionally disturbed students. The students served are also diagnosed with multiple learning differences. Dr. Brian teaches part-time graduate courses in the Department of Special Education at the College of New Jersey (Trenton, NJ), and is an Associate Professor of Reading and Writing at Mercer County College. She received her doctorate through Nova Southeastern University's program for Educational Leaders.