

A PILOT STUDY: THE EFFECT OF BRAIN GYM® ON READING ACHIEVEMENT FOR GRADES THREE THROUGH FIVE, 2002

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INTRODUCTION

Brain Gym is a learning-readiness program that allows students of all ages to master the mechanics of learning and enhance academic achievement. Out of a desire to help my students, I recently put Brain Gym to the test in my reading lab. The simple Brain Gym movements were rapidly and noticeably effective for my students as well as for myself. Having experienced these remarkable results and being aware of the desire of Dr. Sandra Mc Cullen, Associate Superintendent for Wayne County Schools, to further introduce and integrate Brain Gym throughout the Wayne County School System, I contacted her to share my experience.

As we spoke, Dr. Mc Cullen explained her plans for Brain Gym, which included a pilot study to measure the effects of the program on academic achievement.

The goal of the study would be to see if the academic achievement of students in selected classrooms would improve through their daily participation in specific Brain Gym movements. The measurement tools would be the North Carolina EOG Reading Test scores for grades three to five. The scores were to be compared to a control group of students in other schools not using Brain Gym.

The process, data, and findings of the Wayne County Pilot Study are included in this report, as well as some background on Brain Gym and how it impacts the brain and the rest of the body to enhance learning. This report also cites a few of many current findings on brain function and the link between movement and learning. Further, it explains the choice to use Brain Gym in school systems, as well as the need for such a program.

LITERATURE

Children who are unable to retrieve and integrate what they know do not perform at the level of their true potential. And despite our culture's widely held belief that "learning is in our heads," neurophysiological and educational research have demonstrated that movement supports the development of the neurological connections necessary for effective learning.

Brain Gym grew out of clinical studies started in 1969 by Paul E. Dennison, Ph.D., an expert in child motor development, and was later synthesized into a movement program by Dr. Dennison and his wife, Gail Dennison. These activities make all types of learning easier and are especially effective with academic skills. The movements are scientifically and medically proven to be neurologically organizing.

Neurophysiologist Carla Hannaford, Ph.D., states in her book *Smart Moves: Why Learning Is Not All in Your Head*, "We have missed a most fundamental and mysterious aspect of the mind: learning, thought, creativity and intelligence are not processes of the brain alone, but of the whole body. Brain integrative

functions are grounded in the body. The body plays an integral part in all our intellectual processes from our earliest moments right through to old age."

In this regard, Peter Strick, Ph.D., at the Veteran Affairs Medical Center of Syracuse, New York, established an important link in 1995. His staff traced a pathway from the cerebellum back to parts of the brain involved in memory, attention, and spatial perception. Amazingly, according to Dr. Strick, the part of the brain that processes movement is the same part of the brain that processes learning.

Eric Jensen makes a powerful statement in his book *Brain-Based Learning: The New Science of Teaching and Training*, "Despite research findings to the contrary, the erroneous separation of mind and body in the traditional education system stubbornly persists. Indeed, many special education and other teachers have long recognized the connection between physical and mental learning, but overall, schools have not kept up with the research that links physical movement with thinking processes." Jensen goes on to make the following suggestions:

- Use slow stretching and breathing exercises to increase circulation and oxygen to the brain.
- Incorporate energizers every twenty minutes or so.
- Make sure that some of your planned activities have a built-in component of physical movement.
- Give learners permission to move around, stretch, or change postures, so they can monitor and manage their own energy levels.
- Offer novel activities, learning locations, and choices that require moving.

When learners and teachers take advantage of this simple way of increasing the brain's efficiency, learning is more engaging and successful. I have observed that by keeping up with the research and recommendations that have been made by many, the Wayne County School System has been able to take giant strides toward providing a whole-brain learning environment for our students.

METHODOLOGY

THE EXPERIMENTAL GROUP

Our school system chose Grantham School grades three to five for the study because these classes have access to a staff member with training in Brain Gym for Educators coursework. At least one classroom per grade level was chosen for the study. The classrooms that would use Brain Gym were those whose teachers volunteered to participate in the study. The teachers were asked to carry out each of the following actions for the 2001-2002 traditional school year:

1. Attend six hours of formal Brain Gym training.
2. Teach and use selected Brain Gym movements in their classrooms a minimum of fifteen minutes each day.
3. Attend a monthly one-hour support session.
4. Invite a Brain Gym Consultant into the classroom as needed.
5. Allow some students, as selected by the teacher, to leave class as needed for an individual or small group Brain Gym session.

6. Encourage the students to be self-aware and advocate independent use of the movements.

The six hours of training were presented by a qualified Brain Gym consultant and included instruction in the theory of Brain Gym as well as in the use of the twenty-six Brain Gym movements. We chose to focus on seven of the twenty-six movements for daily use, with the others to be taught and used in the classrooms at the teacher's discretion.

The seven activities selected for the test period were water, Brain Buttons, the Cross Crawl*, Hook-ups, the Calf Pump, Lazy 8s, and the Thinking Cap. These movements were chosen because they provide for a minimum of two movements from each of the three dimensions defined by the Dennisons in their basic Brain Gym course. These dimensions are:

Laterality: the ability to coordinate one side of the brain with the other.

Focus: the ability to coordinate the back and front areas of the brain.

Centering: the ability to coordinate the top and bottom areas of the brain.

The students were instructed by their teachers on the seven movements and their use, and then began a period of daily participation. The remaining Brain Gym movements were introduced throughout the school year and were used frequently as well. The students were allowed and encouraged to use Brain Gym movements independently throughout the school day. Regular visits to the classroom by a consultant further motivated the children to use the movements as they became increasingly aware of their unique learning styles and individual needs.

Allowing students to address those styles and needs with movements of their choosing empowered them to create their own whole-brain learning environment within the walls of the classroom. The physical education teachers also integrated some of the Brain Gym movements into PE warm-ups.

A Brain Gym consultant facilitated the work of individual students or small groups of students who continued to have difficulty focusing, staying on task, or taking tests. In these sessions, specific areas such as attention, comprehension, and stress management, along with specific academic skills, were addressed. Occasionally, special motivational events were scheduled for the students. These events had such names as Brain Game in the Gym, Energy on the Goal assemblies, and Tasty Treat Trips.

THE CONTROL GROUP

The control group was selected from Wayne County students who had not been exposed to Brain Gym. These students attended schools where Brain Gym had not been formally introduced and had not been used in their classrooms. The control subjects were matched with experimental subjects for grade level, gender, race, and pretest Reading End-of-Grade Test scores.

RESEARCH DESIGN

Dr. Craig McFadden, Assistant Superintendent of Wayne

County Schools, recommended that the study use an experimental/control, mean gain research design. All students in the study had End-of-Grade Test scores from the previous school year in their school records. The students in both groups were administered the End-of-Grade Tests at the end of the school year in which the study took place. The scale score point gain was calculated for each student in the experimental and control groups. The gain scores for each group were compared for statistical significance using a paired sample t-test. An alpha level of $< .05$ was accepted as the standard for level of confidence.

RESULTS

It had been hypothesized that the students in the experimental group, who were in classrooms using Brain Gym activities, would make significantly more achievement gains on the End-of-Grade Reading Test than the students in the control group. As presented in Table 1, results from the paired t-test indicate a statistically significant difference in the reading achievement gain between the two groups ($t = 2.03$, $df = 57$; $p < .05$). The direction of difference is supportive of the hypothesis: the experimental group attained a greater gain in reading achievement than the control group (pre-test mean for both groups = 145.4, post-test mean for experimental group = 152.7, post-test mean for control group = 150.8). The analysis suggests that the Brain Gym activities contributed to the greater achievement gain experienced by the experimental group.

Table 1
PAIRED SAMPLE T-TEST ANALYSIS

Source	M Gain	SD	df	t	p
Experimental Group	7.3	6.57	57	2.03	$< .05$
Control Group	5.4	8.86			

DISCUSSION

The inclusion of the Brain Gym movements in the classroom proved to be highly successful. With Brain Gym, the overall learning environment becomes a productive place where the separation of mind and body no longer stubbornly persists.

It now appears that, in Wayne County Schools, the full educational potential of each participant can be realized. Over the next two years we want to see full integration of Brain Gym throughout Wayne County Schools. I express my gratitude for the exceptional efforts of Dr. Sandra McCullen, Dr. Craig McFadden, and all of the teachers and students who participated in this study and contributed so highly to its success.

REFERENCES:

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