

WHAT REALLY WORKS! in Education

Our goal here today is threefold, to introduce you to neurofeedback if you haven't heard of it , to expand your knowledge if you have and to provide you with some guidelines as to how to institute a neurofeedback program in your school.

Wouldn't it be wonderful if you could spend all of your time teaching? How much of your time and the time of your teaching assistants is spent redirecting and refocusing students who just can't seem to sit still or are having trouble accessing the curriculum? How much better would your test scores be if all your students were performing at their peak level?

As you sit with parents at a teachers conference or an IEP meeting, know that there is an intervention available to address these issues. It is called neurofeedback, EEG biofeedback, or neurotherapy. It has been used clinically for decades and most recently has found its way to the classroom.

What is neurofeedback?

- Neurofeedback is a drug-free noninvasive brain training regimen that, over time, retrains the brain to its "out-of-the-box" self managed state. Over a number of sessions, your student will, utilizing entertaining graphics, see his or hers own brain in action and learn proper self-regulation. It's easy, fun and has been highly validated scientifically.
- Neurofeedback is been used in a wide variety of circumstances to relieve the symptoms of ADHD, ASD, LD and a wide variety of other behavioral symptomatology.

How can I utilize it in my classroom?

- Neurofeedback can be used as an intervention when a student has been identified with attention and focus issues, behavioral issues, or any any of the wide array of learning challenges
- It is been used in a variety of schools over the last 20 years to improve attention and focus, reduce impulsivity, aggressive behaviors, to generally improve classroom management, and with the attendant improvements in academic focus better grades are the obvious outcome.
- It is currently being used with great success in several schools in the San Fernando Valley.

How to start a program in my school?

Administration, teacher and parental support is crucial. Once the benefits of this approach are understood, a scalable approach can be designed.

- The first phase, once one or more students are identified as appropriate subjects for this training, and all parties have expressed support, an outside contractor such as myself or Jay can provide training either on-site or in our clinics. Once positive results are obtained, the program can be expanded.
- The second phase would involve an experienced clinician supervising the training of a dedicated staff member to assist in ongoing training, equipment can be leased or purchased depending on funding and more students can be enrolled.
- The third phase would be an ongoing program run by trained staff members supervised by a clinician responsible for proper individual protocol design and case management.

Sources of funding

Parents Associations

Local School Districts

Individual School discretionary funds -computers/ technology/ special learning projects

Local and National Foundations

Government grants – Federal, State or Local

Business donations

Staff

Special Education Teachers

Paraprofessionals

Interns from local Universities

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Neurofeedback in schools

Foks, M. (2005). Neurofeedback training as an educational intervention in a school setting: How the regulation of arousal states can lead to improved attention and behavior in children with special needs.- *Educational & Child Psychology* , 22(3), 67-77.

The current choice of treatment for the remediation of attentional and behavioral difficulties among primary school children with special educational needs (SEN) is, increasingly, pharmacological. If neurofeedback can regulate brain arousal states and thereby improve attention, behavior and readiness to learn, there may be a case for incorporating it into the special needs provision of mainstream primary schools, thus avoiding the use of potentially damaging stimulant medication as a means of controlling behavior and promoting inclusion.

An experimental design was used, employing the TOVA test as a pre-/post-test measure of attention and the TOVA rating scale as parental pre/post measure of behavior, plus qualitative feedback as a post-treatment measure of attention/behavior. Results indicate that neurofeedback may make an important impact on emotions and affect of the SEN individual, leading to improved behavior and improved attentional capability; quality time spent on a no-failure task of any kind on a one-to-one basis may be beneficial to children with SEN, affecting their personal belief system and behavior; incorporating neurofeedback as part of the school-based special needs provision is feasible and practicable

Research Articles on Neurofeedback in Schools

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Carmody, D. P., Radvanski, D. C., Wadhvani, S., Sabo, J. J., & Vergara, L. (2001). EEG biofeedback training and attention-deficit/hyperactivity disorder in an elementary school setting. *Journal of Neurotherapy*, 4(3), 5-27.

Rasey, H. W., Lubar, J. E., McIntyre, A., Zoffuto, A. C., & Abbott, P. L. (1996). EEG biofeedback for the enhancement of attentional processing in normal college students. *Journal of Neurotherapy*, 1(3), 15-21.

Other articles of interest.

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Linden, M., Habib, T., & Radojevic, V. (1996). A controlled study of the effects of EEG biofeedback on cognition and behavior of children with attention deficit disorder and learning disabilities. *Biofeedback and Self Regulation*, 21(1), 35-49.

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Monastra, V.J., Monastra, D.M., & George, S. (2002). The effects of stimulant therapy, EEG biofeedback, and parenting style on the primary symptoms of attention-deficit/hyperactivity disorder. *Applied Psychophysiology and Biofeedback*, 27(4), 231-249.

Patrick, G.J. (1996). Improved neuronal regulation in ADHD: An application of fifteen sessions of photic-driven EEG neurotherapy. *Journal of Neurotherapy*, 1(4), 27-36.

Ramos, F. (1998). Frequency band interaction in ADD/ADHD neurotherapy. *Journal of Neurotherapy*, 3(1), 26-41. Page 13

Rossiter, T.R. (1998). Patient-directed neurofeedback for ADHD. *Journal of Neurotherapy*, 2(4), 54-63.

Rossiter, T.R., & La Vaque, T.J. (1995). A comparison of EEG biofeedback and psychostimulants in treating attention deficit/hyperactivity disorders. *Journal of Neurotherapy*, 1(1), 48-59.

Shouse, M.N., & Lubar, J.F. (1979). Operant conditioning of EEG rhythms and ritalin in the treatment of hyperkinesis. *Biofeedback and Self Regulation*, 4(4), 299-312.

Thompson, L., & Thompson, M. (1998). Neurofeedback combined with training in metacognitive strategies: Effectiveness in students with ADD. *Applied Psychophysiology and Biofeedback*, 23(4), 243-263.

Wadhvani, S., Radvanski, D.C., & Carmody, D.P. (1998). Neurofeedback training in a case of attention deficit hyperactivity disorder. *Journal of Neurotherapy*, 3(1), 42-49.

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History of Neurofeedback in schools

1991- New Visions School Minneapolis, MN

The New Visions School, a pre-K through eighth-grade school, started their program in 1991 and by 1999 were in four different schools. They trained approximately 40 to 50 students per year in a school-based neurofeedback clinic. A self rated their success as a 7.5 on a 10 point scale. Funding was accomplished through business donations, school district discretionary funds, local and national foundations, and government grants

1995 - Heart of the Lakes Middle School—Perham. MN

1995 – Enrico Fermi Middle school – Yonkers, NY

This middle school started their program in 1995 and ran through September of 2011 when sources of funding were diverted. One of the largest programs they trained hundreds of students in several schools. Results noted were increasing attention span, grades and attendance with decreases in disruptive behavior, negativity, outbursts, suspensions and tardiness.

1995 – Unita County School district- Lyman, WY

This K-12 school served 60+ students, mostly special-education children. Self rated a nine on a scale of 1 to 10, with notable increases in attention and decreases in impulsivity, oppositional behavior, and depression.

1996 - Moorehead public schools – Moorehead, Mn

1998- Marin County Public schools – Marin, CA

Noted neurofeedback researchers Dr. Julian Isaacs, and Dr. Janet Hutchinson instituted a neurofeedback program in three elementary schools serving 15 students

1998 – Upper Blue Elementary – Breckenridge, Colorado

A K-5 school, five students were served with a self-reported 7 on a scale of 1 to 10 with pre- and post testing showing improvements.

1998 – Fairview Elementary – Milwaukee, Wisconsin

A 1 to 4 elementary school, number of students unknown, a reported success of 10 on a 1 to 10 scale with increases in attention and a decrease impulsivity.

2000 – Batchelder School - Hartford Connecticut

Preschool through eighth grade, one current student, funding from the special education budget.