Music and brain based learning – Susie Davies-Splitter

> *'In the language of modern brain research, we can say that we follow the evolutionary growth of the brain. We begin with the right hemisphere of the brain, with its holisitic and spherical ability to grasp the whole picture at once and then move to the left hemisphere of the brain, with its talent for language and analysis to clarify and reinforce.' (Goodkin, 2002, p.46).*

Before explaining this theory, it's important to know a little about the brain. According to Parker (1994), there are three major parts to our brain.

1. **Reptilian brain** – deals with autonomic functions – feeding, feeling, fighting and sex. Operates best when we feel safe in space.
2.**Limbic Brain** – deals with emotions, body movement, hands on activities, systems and routines as well as the immune system, metabolism and hormonal system. This explains how stress and emotional upsets affect physical health. Music, meditation and visualisation in turn produce positive health benefits. Feeling secure within the group is important to maximise learning.
3.**Cortical Brain**– deals with ideas, thinking processes, problem solving, concepts, images, imagination. The cortex comes into play when we are actively involved in the learning process. 'For optimal learning to take place, as much of the brain as possible needs to work during the learning processes.' (Seymour, 2006, p.11).

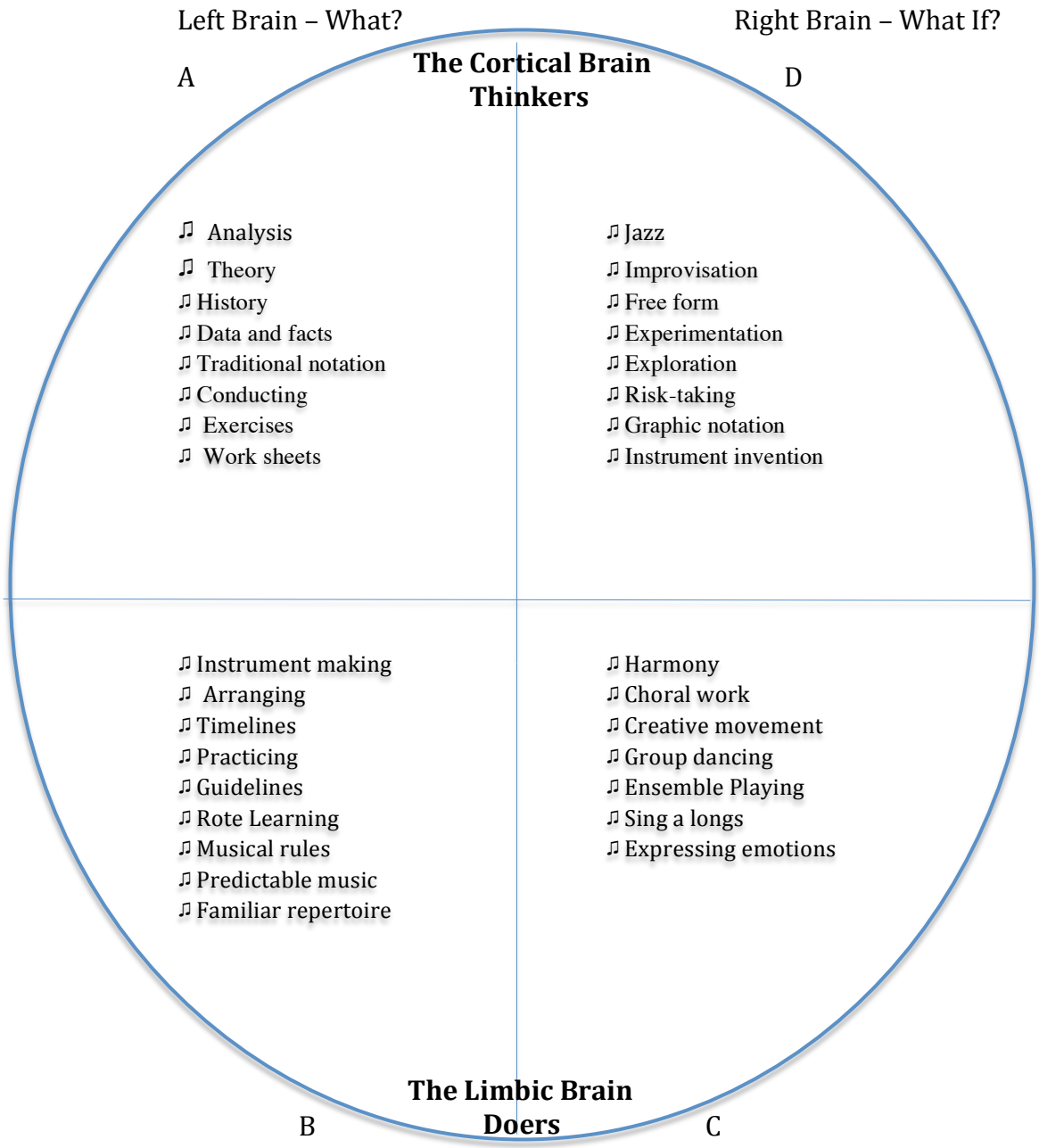
Both the limbic and cortical brains have a right and left hemisphere connected by the corpus callosum giving a four quadrant model.

Various researchers and educators (Parker, 1994; Rose, n.d; Jensen, 2000; Capelli & Brealey, 2000; Goodkin, 2002) advocate that the left brain emphasises language, maths, logic, numbers, sequence, linearity, analysis, words of a song and the right brain emphasises forms and patterns, spatial manipulation, rhythm and musical appreciation, images/pictures, imagination, daydreaming, dimension and melody.

> *'In most people the left side of the brain is responsible for analytical thought, control of the right side of the body, verbal intelligence, mathematical intelligence, literal understanding and linear thought. The right side of the brain is our 'creative side' that is responsible for control of the left side of the body, imagination, dreaming, metaphor and music, emotional intelligence, art, spatial awareness and holistic thinking.' (Capelli & Brealey, 2000, p.83).*

To follow is a diagram of musical learning activities applicable to each quadrant of the brain. (Parker, 1994)

MUSIC LEARNING ACTIVITIES



Young children, music, movement, and the brain

In his excellent book 'Music with the brain in mind', Eric Jensen (2000) points out that 'Young children need high exposure to a wide variety of sounds while the brain is forging novel neural networks.' (p.26). 'Today's evidence suggests that exposure to music at an early age is beneficial, and the sooner the better. If one starts early, one may benefit from a lifetime of enhanced interhemispheric brain activity'. (p.27). Children learn when multiple senses are involved to develop brain connections. For whole brain learning to work at its best, learning must take place through an integration of all the senses and interaction between the two cerebral hemispheres. This can include an immersion in rhythm and rhyme activities, singing songs with actions, movement and playing instruments. 'Many teachers would agree that songs, movement and games are superb neurological exercises….between the patterns found in music and those necessary for proper neurological development.' (Jensen, 2000, p.42).

As well as speech and singing being important for brain development, movement helps to strengthen the neural pathways that link the brain and the body. The brain needs young people to move regularly, using the whole body to keep the body functioning. Activities include fine and gross motor development (rolling, crawling, walking, jumping, skipping etc), balance, eye fitness, spatial development, flexibility and particularly cross patterning (laterality/crossing the midline) that helps to integrate the two cerebral hemispheres.

Movement is integral to a system called Brain gym that includes quick and enjoyable exercises that directly enhances brain function developing the brain's neural pathways. This is based on the principle that moving your body maximizes brain power. Brain Gym grew out of clinical studies started in 1969 by Paul Dennison, Ph. D., an educational therapist, that led him to the study of kinesiology, the science of body movement and the relationship of muscles and posture to brain function. The result is Edu-Kinesthetics (Edu-K) and Brain Gym, a simple and highly effective system of targeted activities that prepare your brain and entire nervous system for optimal performance in all areas.

These specially designed activities integrate body and mind to bring about rapid and often dramatic improvements in: concentration, memory, reading, writing, organizing, listening, physical coordination, and more. There are also noticeable gains in creativity, energy levels, performance and interpersonal relationships. As the major areas of the brain are stimulated through movement, it promotes efficient and cooperative communication between the brainstem, midbrain and cortex which is essential for learning. (www.braingym.org 2008)

> *'Music making contributes to the development of essential cognitive systems, which include reasoning, creativity, thinking, decision making and problem solving. Music making seems to activate and synchronise neural firing patterns that orchestrate and connect multiple cognitive brain sites. Thus the brain's efficiency and effectiveness is enhanced.' (Jensen, 2000, p.30).*

Jensen also comments that listening to music uses highly complex brain functions that are necessary for memory, word sequence and visualisation. As music is sequenced and has a rhythmic or rhyming quality, it makes it easier to remember things and engage our memory. 'As a result we can say that music enhances the ability to create, maintain, transform and relate complicated mental representation.' (p.36).

In summary, the evidence suggests that music is central to learning (sensory, cognitive, emotional and motor areas) and ideally must begin with young children to develop multiple brain systems. The research also tells us that optimal learning occurs when the body through movement is involved as well as an interaction of all our senses. Learning through music and the arts can ultimately provide the impetus for all learning.

References

Capelli, Glenn & Brealey, Sean (2000) *The Thinking Learning Classroom* The True Learning Centre, Australia

Goodkin, Doug (2002) *Play, Sing and Dance*. *An introduction to Orff Schulwerk* Schott, Miami

Jensen, Eric (2000) *Music with the brain in mind* Corwin Press, Cal, USA

Parker, Lorna (2002) *A musical version of Multiple Intelligence for Classroom Use* Brainsense Presentations, NSW

Rose, Colin (n.d.) *Accelerated Learning* The state of the art Multi Mind magazine of the accelerated learning association

Seymour, B (2006) *Salzburg Re-Percussions* Musicworks Vol 11, ANCOS, Australia pp.11-13

www.braingym.org 2011