

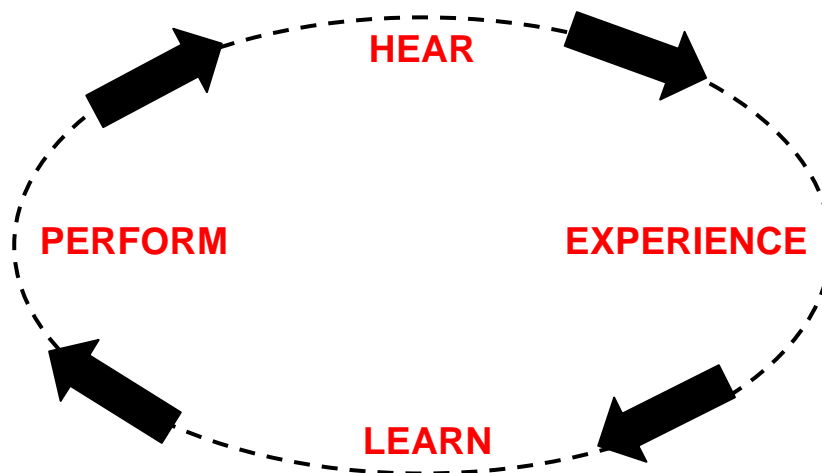
THE LEARNING PROCESS

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It was important in designing the auditory enrichment program to ensure that it was grounded in sound educational pedagogy. Using music and sound also required the program to also follow an accepted approach to the use of music to ensure learning occurred.

Generally the approach used to teach music can be cyclically presented as HEAR - EXPERIENCE – LEARN - PERFORM, creating a convenient acronym "HELP." This is graphically represented below to illustrate the inter-dependence of the stages. Although 'hear' usually occurs first, it is the interaction of all four stages that is important.

Diagram 1: 'HELP' – a graphical representation



Students hear sound/music in a variety of ways through live performance of their own and others' musical renderings and through recorded music. They need to actively engage with sound and music through a range of experiences such as singing, listening, movement, playing of instruments and notating music. These activities involve a range of cognitive processes and they all play a part in learning occurring provided there is deliberate intent. Finally, students need to reproduce or re-create what they have learnt in a kind of 'performance.' This could be an oral articulation of what they have learned, a visual representation, a kinaesthetic (movement/dance/mime/body percussion) manifestation, an instrumental or a vocal rendering. What the above diagram does not indicate is that this final demonstration of learning also needs to be transferred into different contexts or situations to complete the learning cycle.

This process of how learning in music occurs is rooted in a general learning process which, for this neuro-cognitive auditory enrichment programme, focuses on the cultivation of thinking strategies commonly referred to as

cognitive functions. The process is outlined below and simultaneously links the auditory enrichment program to the learning process. The manifestation of the learning stages in the auditory perception program is indicated in blue.

LEARNING PROCESS

STAGE ONE

The in-put stage

- Perceiving information. Receiving can generally be a passive activity. Perceiving implies the training of the mind to develop greater awareness and to take in more details, more subtleties and more nuances. In other words, simply receiving information can result in an overall blurred perception.
- Since children can not merely be **told** to listen but need to be **taught** to listen, the exercises in the auditory enrichment program promote active, structured response to sound sources. Students gradually develop an increasing ability to discern details and nuances separately and then collectively and simultaneously.

STAGE TWO

The elaboration stage includes:

- interpreting and processing so as to understand the information;
- internalising understanding through comparing, contrasting, categorising, making connections, meaningfully associating and elaborating;
- committing information and elaborations to long term memory to develop a structured bank of meaningful knowledge and understanding, - thereby strengthening neural-connections and creating new ones.
- Exercises are methodically and purposefully structured so as to encourage deliberation, which includes all the above bullet points, of what was heard.

STAGE THREE

The out-put stage

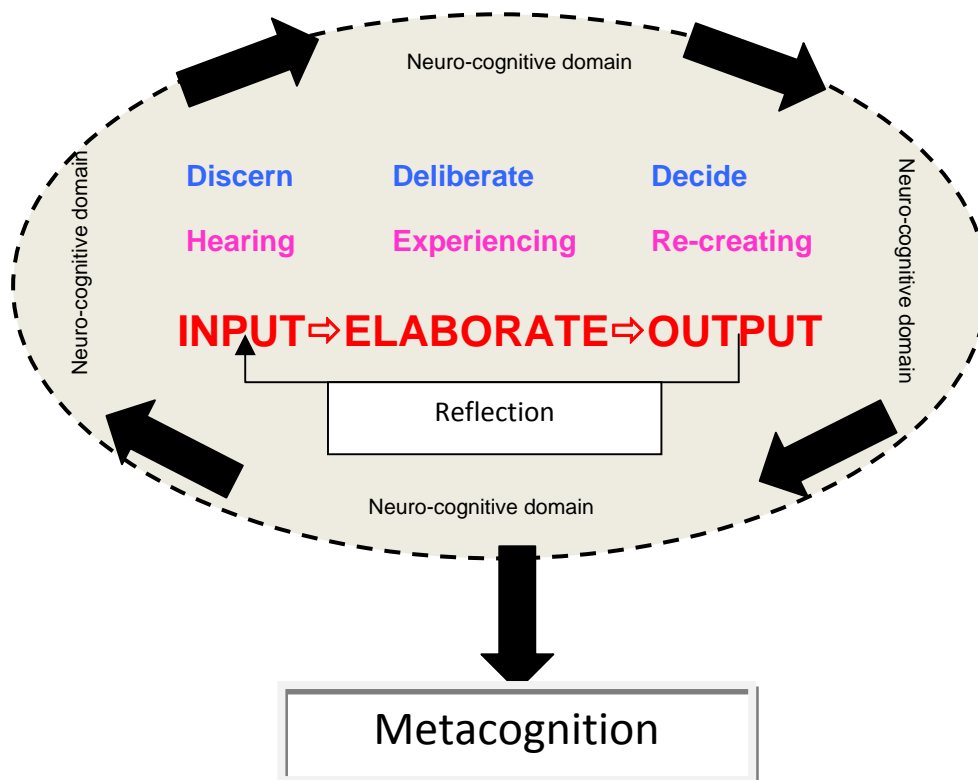
- articulating and communicating knowledge internalised;
- applying knowledge and transferring that understanding to other situations and contexts - thereby strengthening the neural-connections and creating new ones.
- Each block of exercises in the auditory enrichment program culminates in a reflection session followed by an application session both of which result in decisions concerning how to demonstrate what has been learned, both factually and in terms of mental strategies.

All three of the stages - input, elaboration and output - function within a context of purposeful **REFLECTION** which allows learners to consciously consider their thinking in relation to each of the stages and either return to re-engage in one or other of the stages or to proceed to conclusion. Through this process students can be guided to consider how they have succeeded in a task. This process results in them developing an independent ability to think objectively, laterally and creatively, and more importantly, to be able to think about their thinking process and grasp the requirements for success. Whilst a successful learning process promotes ordered and structured thinking, the mental processes are not linear but are inter-dependent and inter-related.

A complete learning cycle is shown in diagram 2 below. The diagram indicates how reflection creates a feedback dimension linking the three stages and causing the learner to either proceed or re-examine and revise as previously stated. The inner shaded area represents the neuro-cognitive domain. By deliberately implementing the learning cycle as presented, existing neural pathways are strengthened and new ones created. As this occurs, the brain is deliberately trained to function at a meta-cognitive level.

Diagram 2 indicates how the development of the neuro-cognitive domain leads directly to metacognition.

Diagram 2: The learning cycle (Dachs, 2008)



Note key words "**HEARING – EXPERIENCING – RE-CREATING**" which

represent the approach to using music for learning and the key words, “**DISCERN – DELIBERATE – DECIDE**” which are convenient words capturing the process used in the auditory enrichment programme. The following table illustrates the reconciling of the approach to music to the general learning process described above.

STAGE ONE

INPUT PHASE



DISCERN involves



HEARING sound input

STAGE TWO

ELABORATION



DELIBERATE involves vocally, kinaesthetically, visually and instrumentally



EXPERIENCING the aspects of sound and mentally
STRUCTURING these experiences as an integral part of
LEARNING

STAGE THREE

OUTPUT PHASE



DECIDE includes



PERFORMING/RE-CREATING sounds making conscious decisions regarding **COMMUNICATING** or **ARTICULATING** understanding.

The diagram above points ultimately to metacognition. Developing metacognition as the conclusion of neuro-cognitive development is the ultimate goal of the learning process. It is the manifestation of the understanding of 'Meta', the Greek prefix meaning 'beyond' or 'behind' and 'cognition' meaning understanding. Education may encourage higher-order thinking which refers to more complicated cognitive activities but metacognition goes further and develops understanding of the mental processes involved in learning. It is concerned with 'thinking about thinking' so that children learn to recognise the mental processes which enable them to succeed. This is what life-long learning is about – understanding your own mental processes and strategies so that you can take more personal responsibility for learning.

Successful learning is about setting up effective mental processes and behaviours so that when any information is received the brain is able to retrieve all the details from the information in a meaningfully structured way with optimal good brain functioning. If the physiological and cognitive contexts

for optimal mental processes are not established appropriately in the child's learning development, the ability to learn is exponentially impaired as the child moves through the educational system.

Metacognition in action enables students not only to see the overt links, but to understand the covert links 'behind' or 'beyond' the immediately apparent.

Experiences need to be perceived as an integrated whole. Any form of fragmentation in both the teacher's presentation and the child's perception thereof results in a lack of overall understanding and minimises learning. The stronger the connections the stronger the 'wiring' in the brain and the more likely that metacognition will occur.

In this program, habitual patterns of mental processes are established so that when any information is received the brain is able to retrieve all the details from the information in a structured way. This becomes increasingly faster and more efficient. The facilitation of these habitual, structured mental processes which are needed to successfully complete auditory tasks associated with music and sound, lays a foundation for higher cognitive abilities. If habitual mental processes are not established early in the child's learning development, learning can become superficial and transitory. If the auditory enrichment program is implemented in the structured way in which it is presented and if the habitual processes are reinforced then the program will indeed do what it purports to do.